
Final Report Phase I RCRA Facility Investigation for Appendix I Sites

VOLUME VI

AOC, Spill Pond (Drainage Spillway Behind Building 1030)
AOC, Old Pesticide Storage Area



Department of the Air Force
Oklahoma City Air Logistics Center
Tinker Air Force Base, Oklahoma

September 1994

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List of Acronyms

AFB	Air Force Base
AOC	area of concern
CAL	Corrective Action Levels
CDM	CDM Federal Programs Corporation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMS	Corrective Measures Study
DCQAP	Data Collection Quality Assurance Plan
DERP	Defense Environmental Restoration Program
DOD	U.S. Department of Defense
DQO	Data Quality Objective
EID	Engineering Installation Division
EMO	Environmental Management Operations
EPA	U.S. Environmental Protection Agency
FID	flame ionization detector
ft/ft	foot per foot
GC/MS	gas chromatography/mass spectrometry
HSWA	Hazardous and Solid Waste Amendments
IRP	Installation Restoration Program
IWTP	industrial wastewater treatment plant
LSZ	lower saturated zone
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MS	matrix spike
MSD	matrix spike duplicate
msl	mean sea level
NAAQS	National Ambient Air Quality Standards
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
PA/SI	preliminary assessment/site investigation

List of Acronyms (Continued)

PCE	tetrachloroethene
PID	photoionization detector
PRC	PRC Environmental Management, Inc.
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI/FS	remedial investigation/feasibility study
ROD	record of decision
RPD	relative percent difference
SARA	Superfund Amendments and Reauthorization Act
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TCE	trichloroethene
TOC	total organic carbon
TPH	total petroleum hydrocarbon
TSD	treatment, storage, and disposal (facility)
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
USZ	upper saturated zone
UWBZ	upper water bearing zone
VOA	volatile organic analysis
VOC	volatile organic compounds
WQS	Water Quality Standards

Executive Summary

This report provides a summary of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) conducted at area of concern (AOC), Spill Pond, Drainage Spillway behind Building 1030 (Drainage Spillway), Tinker Air Force Base (AFB), Oklahoma. The report has been prepared to determine whether hazardous constituents as defined by federal regulations have been released into the environment from the Drainage Spillway. The RFI for this unit has been conducted in accordance with the Work Plan prepared by CDM Federal Programs Corporation (CDM). This RFI report presents the following information:

- Site characterization (Environmental Setting)
- Source term definition (Source Characterization), if any
- Degree of contamination (Contamination Characterization)
- Identification of actual or potential receptors
- Analytical results and analysis (Data Analysis)
- Identification of action levels for the protection of human health and the environment (Protection Standards)
- Conclusions and recommendations for future work.

Tinker AFB is located in central Oklahoma, in the southeast portion of the Oklahoma City metropolitan area, in Oklahoma County. The Base is bounded by Sooner Road to the west, Douglas Boulevard to the east, Interstate 40 to the north, and Southeast 74th Street to the south. The Base encompasses approximately 5,000 acres.

Background. Tinker AFB began operations in 1942 and serves as a worldwide repair depot for a variety of aircraft, weapons, and engines. These activities require the use of hazardous materials and result in the generation of hazardous wastes. These wastes have included spent organic solvents, waste oils, waste paint strippers and sludges, electroplating wastewaters and sludges, alkaline cleaners, acids, FreonTM, jet fuels, and radium paints.

In 1984, Congress amended the RCRA with the Hazardous and Solid Waste Amendments (HSWA), which allow U.S. Environmental Protection Agency (EPA) to require, as a permit condition, a facility to undertake corrective action for any release of hazardous waste or

constituents from any solid waste management unit (SWMU) at a treatment, storage, and disposal (TSD) facility. On January 12, 1989, Tinker AFB submitted its Part B permit application for renewal of its operating RCRA Hazardous Waste Storage facility permit. The final RCRA HSWA permit issued on July 1, 1991, requires Tinker AFB to investigate all SWMUs and AOCs and to perform corrective action at those identified as posing a threat to human health or the environment. The permit specifies that an RFI be conducted for 43 identified SWMUs and two AOCs on the Base. This document has been prepared to determine whether sufficient investigations have been conducted to meet the permit requirements for the Drainage Spillway.

Source Description. The Drainage Spillway is a drainage area located northwest of Building 1030 (PRC Environmental Management, Inc. [PRC], 1989). Building 1030 is located east of SWMU-4, Landfill 2 in the southwestern part of the Base. The Drainage Spillway receives runoff from Building 1030 roof drains and ramp areas and was believed to receive drainage from the wash rack drains.

Site Investigations. The Drainage Spillway was recently added to the Installation Restoration Program (IRP), and no work has yet been conducted at the site. To determine if Building 1030 wash water flows into the storm drains (and thus into the Drainage Spillway) flow/dye tests were performed at the floor drainage trench inside the building. In addition, water was collected from a sump located along the storm drain to characterize the water flowing from the Building 1030 area into the Drainage Spillway.

The first test introduced water colored with yellow dye into the drainage system of Building 1030. Observations were made at the Drainage Spillway outflow, the two sumps east of Building 1030, and several sewer and drainage lines located near the sumps for changes in the flow rate or the presence of yellow dye. No change in flow rate or yellow dye was observed.

Although this first dye test did not conclusively show the destination of the Building 1030 wash water, it did prove that the trench drain is not connected to the sump or the Drainage Spillway.

The second dye test was conducted on March 3, 1994. Water and bright green dye were introduced into the floor grates inside Building 1030, and 27 minutes later a dye plume was observed in a sanitary sewer manhole located approximately 600 feet northwest of the

building. This test proved that the water from the Building 1030 wash area drains to the sanitary sewer system.

A sample of the water held in the sump north of Building 1030 was collected and analyzed to determine the characteristics of the storm drain water. The sump is located along the storm drain line which leads to the Drainage Spillway. This sample was analyzed for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), total petroleum hydrocarbons (TPH), and priority pollutant metals. Organic parameters from the water in the sump that were detected above the laboratory detection limits are tetrachloroethene (PCE) at 16 micrograms per liter ($\mu\text{g/L}$), trichloroethene (TCE) at 11 $\mu\text{g/L}$, cis-1,2-dichloroethene at 110 $\mu\text{g/L}$ to 120 $\mu\text{g/L}$, and total organic carbon (TOC) at 8.5 to 11 milligrams per liter (mg/L). Metals detected in the source characterization sample were zinc at 0.027 mg/L , iron at 0.11 mg/L , and lead at 0.0077 to 0.012 mg/L .

A total of two soil samples were collected along the Drainage Spillway, which connects the Building 1030 storm drain outfall with Crutch Creek. These samples were analyzed for VOCs, SVOCs and priority pollutant metals (aluminum, arsenic, barium, beryllium, cadmium, chromium, chromium VI, copper, iron, lead, mercury, nickel, silver, and zinc). All metals were at levels within the ranges found in the United States Geological Survey (USGS) Report, "Elemental Composition of Surficial Materials from Central Oklahoma," (USGS, 1991). No organic compounds, volatile or semivolatile, were detected above the method reporting limit in the soil. Beryllium was found at 1.1 milligrams per kilogram (mg/kg) in both soil samples, which was above the SWMU corrective action limit (CAL) for soil of 0.2 mg/kg , but was less than the background level of 3 mg/kg . No constituents of concern were found in the sump water or soils.

During the RFI at the Drainage Spillway no monitoring wells were installed, and the borings drilled did not reach the groundwater level. Thus, no groundwater samples were collected, and no information regarding groundwater quality is available from this investigation.

Conclusions. Because no constituents of concern were found in the sump water or the soils and flow testing indicated that the washwater from Building 1030 drained to the sanitary sewers and not to the Drainage Spillway, Building 1030 operations have not impacted the Drainage Spillway. The surface water runoff from the Drainage Spillway is presently being sampled weekly per the NPDES Permit, Storm Water Monitoring Program. No further action is recommended for the Drainage Spillway.

1.0 Introduction

The U.S. Department of the Air Force is conducting an Installation Restoration Program (IRP) at Tinker Air Force Base (AFB), Oklahoma (Figure 1-1). This program intends to identify sites through initial assessments, characterize each solid waste management unit (SWMU) or area of concern (AOC), study and select cleanup methods, if required, and implement a cleanup. In support of this effort, a Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was conducted at AOC, Spill Pond, Drainage Spillway behind Building 1030 (Drainage Spillway), at Tinker AFB, Oklahoma (Figure 1-2). This Phase I investigation focuses its efforts on determining if there have been any releases of contamination to the Drainage Spillway resulting from operations in Building 1030.

Adequate information must be gathered in a Phase I RFI to support a Phase II investigation, a Corrective Measures Study (CMS), or interim measures, if necessary. A phased approach has been taken by Tinker AFB for the Drainage Spillway site investigation. This phasing of the RFI is in accordance with the U.S. Environmental Protection Agency (EPA) RFI guidance documents and is also the most practical approach for this site where little or no information is available on past practices.

Outlined below are the minimum tasks generally required by the EPA for a RCRA investigation of a SWMU or AOC:

- Task I - Description of Current Conditions
- Task II - Work Plan
- Task III - Facility Investigation
- Task IV - Investigative Analysis
- Task V - Report.

The Task I requirements for the Drainage Spillway have been addressed in the *Description of Current Conditions* (Tinker, 1992), which outlines the geology, hydrogeology, and current conditions of the site. Task II requirements have been addressed in the *Final RFI Work Plan* (CDM Federal Programs Corporation [CDM], 1992) and the *Final RFI Work Plan - Amendments* (IT Corporation [IT], 1993a). The *Final RFI Work Plan* and the *Final RFI Work Plan - Amendments* include a Data Management Plan, Project Management Plan, Data Collection Quality Assurance Plan, Health and Safety Plan, and amendments as necessary to perform a Phase I RFI. Tasks III and IV requirements, which characterize the site, determine the

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DRAWN BY: P.O. TERRY	DRAWN BY:	ENGR. CHK. BY: C. WALLACE	PROJ. MGR. J. TAYLOR	PROJ. NO.:

3/23/94 POT
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OKLAHOMA

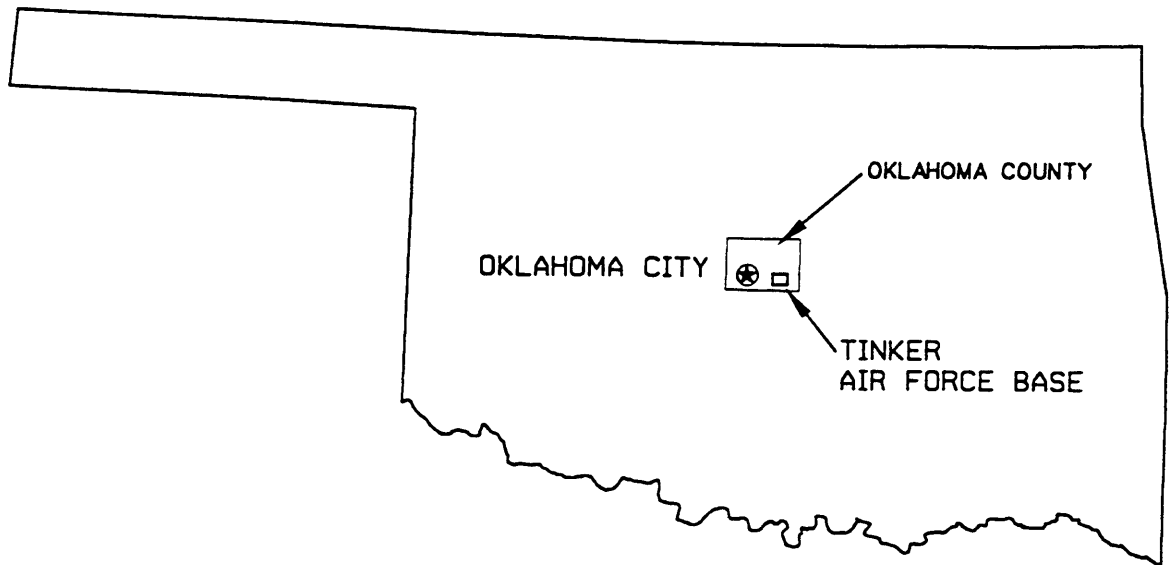
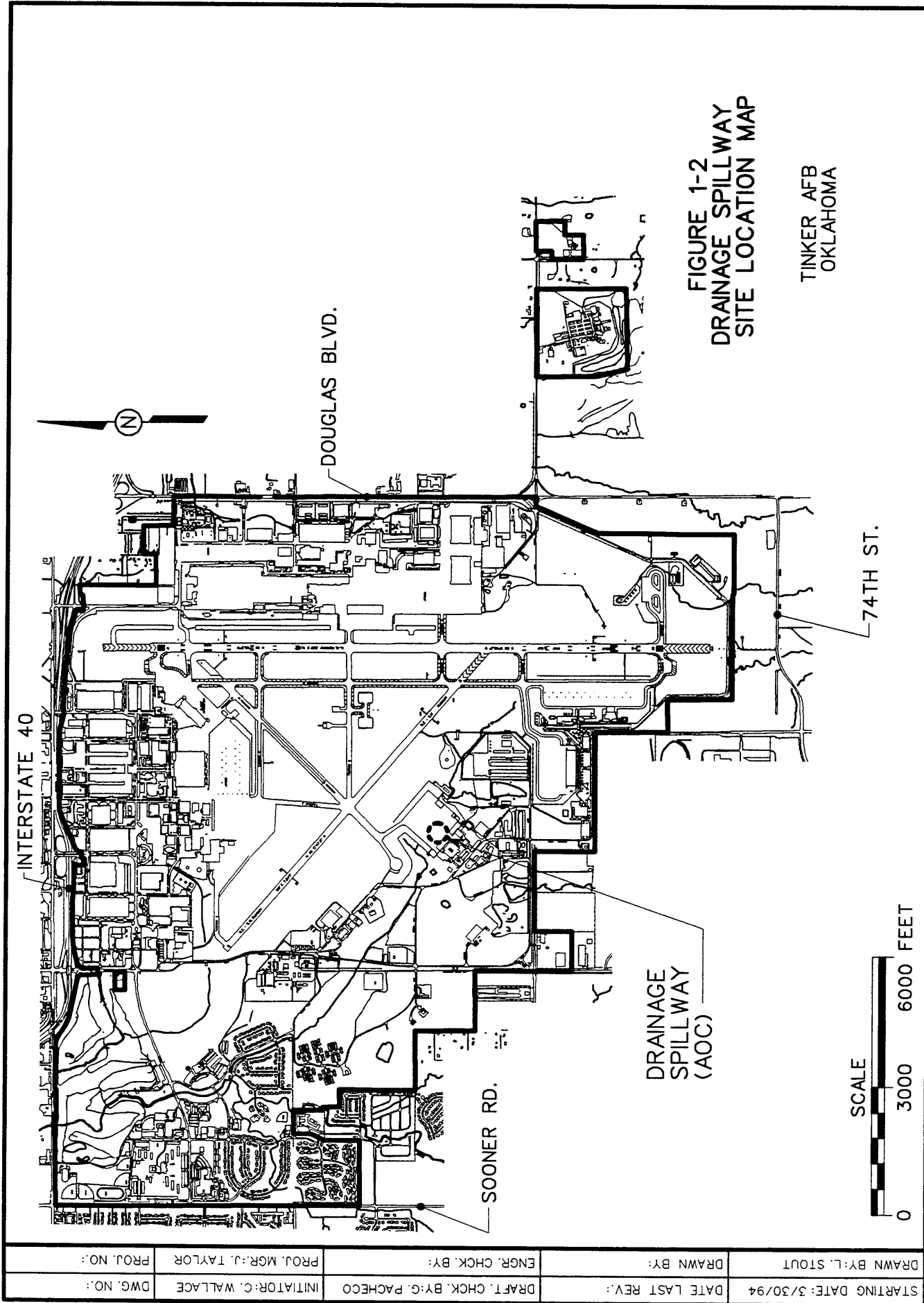


FIGURE 1-1
TINKER AIR FORCE BASE
OKLAHOMA
STATE INDEX MAP

PREPARED FOR
TINKER AFB
OKLAHOMA



presence of contamination, and identify actual and potential receptors have been addressed in this report. This report also satisfies the requirements of Task V.

1.1 Purpose

This report has been prepared in response to the U.S. Department of the Air Force, Tinker AFB, Oklahoma request for a Phase I RFI and report for the Drainage Spillway.

The purpose of this report is to document and present the findings of the RFI conducted at the Drainage Spillway. The primary objective of the RFI was to determine if contaminant releases to the Drainage Spillway have occurred from Building 1030 operations and to determine if a more comprehensive Phase II RFI or a CMS is required. This RFI Report presents the following information:

- Site characterization (Environmental Setting)
- Source term definition (Source Characterization)
- Degree of contamination (Contamination Characterization)
- Identification of actual or potential receptors
- Analytical results and analysis (Data Analysis)
- Identification of action levels for the protection of human health and the environment (Protection Standards)
- Conclusions and recommendations for future work.

This document will also describe the procedures and methods of field sampling and cite any previous investigations conducted at the site.

1.2 Scope of Investigation

The soils below an outfall near Building 1030 were investigated. Two soil samples were taken at depths from 0 to 18 inches along the Drainage Spillway to determine the presence of subsurface soil contamination. One source characterization sample was collected from a sump located north of Building 1030 to determine if floor drains were connected to the sump, and or, Drainage Spillway. Flow tests were also conducted on the floor drains to determine drainage connections.

2.0 Background

2.1 Tinker AFB Facility Description and History

Tinker AFB is located in central Oklahoma, in the southeast portion of the Oklahoma City metropolitan area, in Oklahoma County (Figure 1-1) with its approximate geographic center located at 35° 25' latitude and 97° 24' longitude (U.S. Geological Survey [USGS], 1978). The Base is bounded by Sooner Road to the west, Douglas Boulevard to the east, Interstate 40 to the north, and Southeast 74th Street to the south. An additional area east of the main Base is used by the Engineering Installation Division (EID) and is known as Area D. The Base encompasses approximately 5,000 acres.

Tinker AFB was originally known as the Midwest Air Depot and began operations in July 1941. The site was activated March 1942 and during World War II the depot was responsible for reconditioning, modifying, and modernizing aircraft, vehicles, and equipment. Tinker AFB now serves as a worldwide repair depot for a variety of aircraft, weapons, and engines. These activities require the use of hazardous materials and result in the generation of hazardous wastes. These wastes have included spent organic solvents, waste oils, waste paint strippers and sludges, electroplating wastewaters and sludges, alkaline cleaners, acids, FreonTM, jet fuels, and radium paints. Wastes that are currently generated are managed at two permitted hazardous waste storage facilities. Prior to enactment of RCRA, however, industrial wastes were discharged into unlined landfills and waste pits, streams, sewers, and ponds. Releases from these areas as well as from underground tanks have occurred. As a result, there are numerous sites of soil, groundwater, and surface water contamination on Base.

2.2 Site Description and History

The Drainage Spillway is a drainage area located northwest of Building 1030 (PRC Environmental Management, Inc., [PRC], 1989). Building 1030 is located east of SWMU-4, Landfill 2, in the southwestern part of the Base. The Drainage Spillway receives runoff from Building 1030 roof drains and adjacent ramp areas, and was believed to receive drainage from the wash rack drains. Dye testing performed on March 3, 1994 confirmed that the wash waters of Building 1030 flow to the sanitary sewer.

2.3 Regulatory History and Status

In 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to address the cleanup of hazardous waste disposal sites across the country. CERCLA gave the president authority to require responsible parties to remediate the sites or to undertake response actions through use of a fund (the Superfund). The president, through Executive Order 12580, delegated the EPA with the responsibility to investigate and remediate private party hazardous waste disposal sites that created a threat to human health and the environment. The president delegated responsibility for investigation and cleanup of federal facility disposal sites to the various federal agency heads. The Defense Environmental Restoration Program (DERP) was formally established by Congress in Title 10 U.S. Code (USC) 2701-2707 and 2810. DERP provides centralized management for the cleanup of U.S. Department of Defense (DOD) hazardous waste sites consistent with the provisions of CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] 300), and Executive Order 12580. To support the goals of the DERP, the IRP was developed to identify, investigate, and clean up contamination at installations.

Under the Air Force IRP, Tinker AFB began a Phase I study similar to a preliminary assessment/site investigation (PA/SI) in 1981. This study helped locate 14 sites that needed further investigation. A Phase II study was performed in 1983.

In 1986, Congress amended CERCLA through the SARA, which waived sovereign immunity for federal facilities. SARA gave EPA authority to oversee the cleanup of federal facilities and to have the final authority for selecting the remedial action at federal facilities placed on the National Priorities List (NPL) if the EPA and the relevant federal agency cannot concur in the selection. Congress also codified the DERP (SARA Section 211), setting up a fund for the DOD to remediate its sites because the Superfund is not available for the cleanup of federal facilities. DERP specifies the type of cleanup responses that the fund can be used to address.

In response to SARA, the DOD realigned its IRP to follow the investigation and cleanup stages of the EPA:

- PA/SI
- Remedial investigation/feasibility study (RI/FS)

- Record of Decision (ROD) for selection of a remedial action
- Remedial design/remedial action.

In 1984, Congress amended the RCRA with the Hazardous and Solid Waste Amendments (HSWA) which allow the EPA to require, as a permit condition, a facility to undertake corrective action for any release of hazardous waste or constituents from any SWMU at a treatment, storage, and disposal (TSD) facility. On January 12, 1989 Tinker AFB submitted its Part B permit application for renewal of its operating RCRA hazardous waste storage facility permit.

EPA, in the Hazardous Waste Management Permit for Tinker AFB dated July 1, 1991, identified 43 SWMUs and two AOCs on Tinker AFB that need to be addressed. This permit requires Tinker AFB to investigate all SWMUs and AOCs and to perform corrective action at those identified as posing a threat to human health or the environment. Since receiving the Hazardous Waste Management Permit, many IRP sites have come under the jurisdiction of the RCRA permits branch of the EPA.

2.4 Summary of Previous Investigations

The Drainage Spillway was recently added to the IRP, and no work has yet been conducted at the site. Surface water runoff from the Drainage Spillway is presently sampled weekly for the National Pollutant Discharge Elimination System (NPDES) Permit, Storm Water Monitoring Program.

3.0 Environmental Setting

3.1 Topography and Drainage

3.1.1 Topography

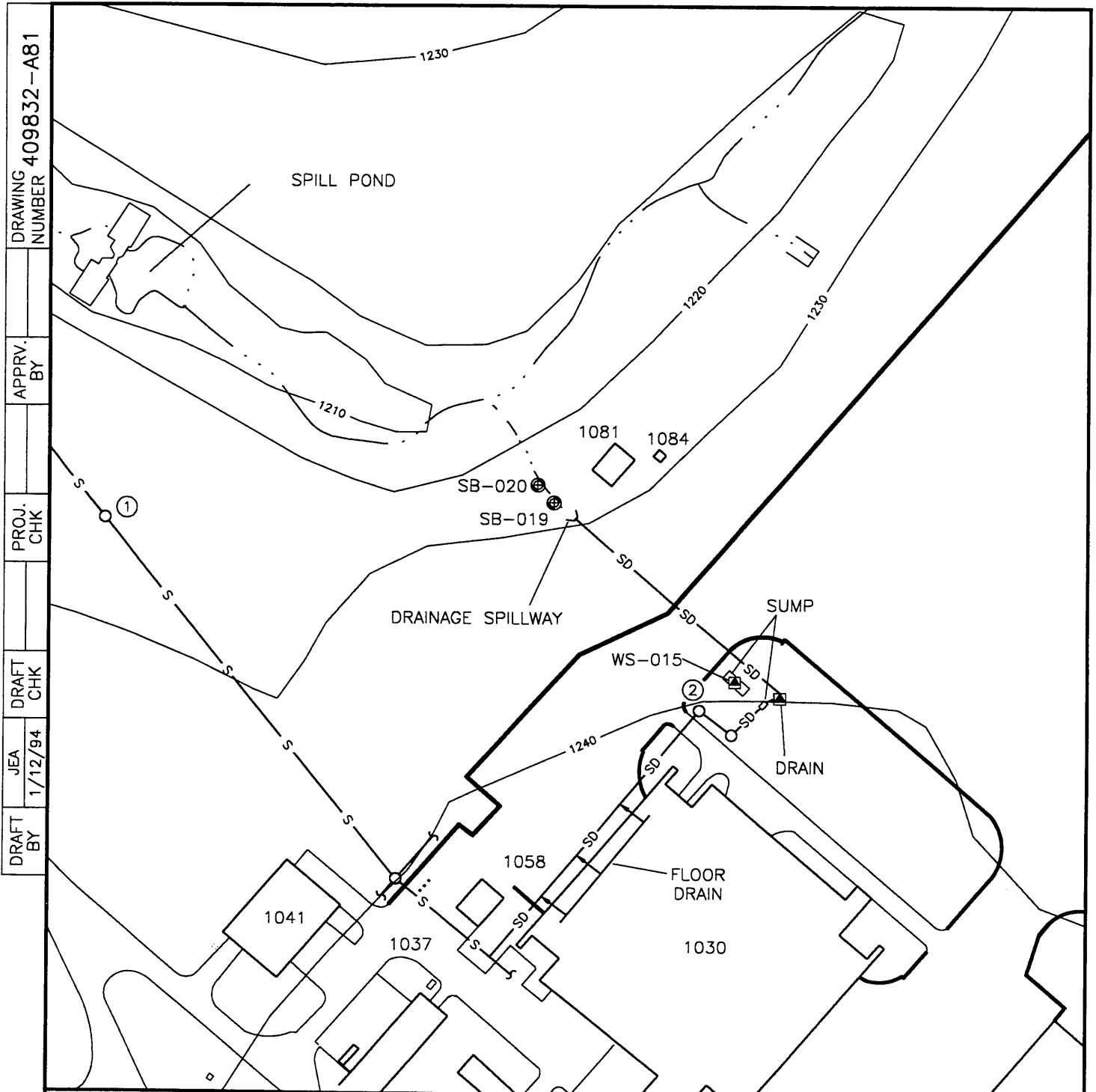
Regional/Tinker AFB. The topography of Oklahoma City and surrounding area varies from generally level to gently rolling in appearance. Local relief is primarily the result of dissection by erosional activity or stream channel development. At Oklahoma City, surface elevations are typically in the range of 1,070 to 1,400 feet mean sea level (msl). At Tinker AFB ground surface elevations vary from 1,190 feet msl near the northwest corner where Crutch Creek intersects the Base boundary to approximately 1,320 feet msl at Area D (EID), located on 59th Street, east of the main installation.

Site. The Drainage Spillway ranges in elevation from 1,240 feet msl at Building 1030 to approximately 1,210 feet msl within this AOC (Figure 3-1).

3.1.2 Drainage

Regional/Tinker AFB. Drainage of Tinker AFB land areas is accomplished by overland flow of runoff to diversion structures and thence to area surface streams, which flow intermittently. The northeast portion of the Base is drained primarily by tributaries of Soldier Creek. The north and west sections of the Base, including the main instrument runway, drain to Crutch Creek, a tributary of the North Canadian River. Two small unnamed intermittent streams crossing installation boundaries south of the main instrument runway generally do not receive significant quantities of Base runoff due to site grading designed to preclude such drainage. These streams, when flowing, extend to Stanley Draper Lake, approximately one-half mile south of the Base.

Site. Drainage in the area of Building 1030 is in a northerly direction towards the Drainage Spillway.



DRAWING NUMBER 409832-A81

APPRV. BY

PROJ. CHK

DRAFT CHK

JEA 1/12/94

DRAFT BY

Map Source: TINKER AFB

NOTES:

- ① DYE PLUME OBSERVED IN THIS MANHOLE DURING DYE/FLOW TESTING
- ② NO WATER OBSERVED IN THIS MANHOLE DURING DYE/FLOW TESTING



0 150
FEET

LEGEND

- SB-019 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- WS-015 SOURCE SAMPLE LOCATION AND IDENTIFICATION NUMBER
- MANHOLE
- S — SEWER
- SD — STORM DRAINAGE
- - - DRAINAGE
- 1220— CONTOUR INTERVAL

FIGURE 3-1
TOPOGRAPHIC MAP OF
DRAINAGE SPILLWAY WITH
LOCATIONS OF SOURCE SAMPLES
AND SOIL BORINGS

PREPARED FOR
TINKER AFB
OKLAHOMA

Do Not Scale This Drawing

3.2 Geology

3.2.1 Regional/Tinker AFB Geology

Tinker AFB is located within the Central Redbed Plain Section of the Central Lowland physiographic province, which is tectonically stable. No major fault or fracture zones have been mapped near Tinker AFB. The major lithologic units in the area of the Base are relatively flat-lying and have a regional westward dip of about 0.0076 foot per foot (ft/ft) (Bingham and Moore, 1975).

Geologic formations that underlie Tinker AFB include, from oldest to youngest, the Wellington Formation, Garber Sandstone, and the Hennessey Group; all are Permian in age. All geologic units immediately underlying Tinker AFB are sedimentary in origin. The Garber Sandstone and Wellington Formation are commonly referred to as the Garber-Wellington Formation due to strong lithologic similarities. These formations are characterized by fine-grained, calcareously-cemented sandstones interbedded with shale. The Hennessey Group consists of the Fairmont Shale and the Kingman Siltstone. It overlies the Garber-Wellington Formation along the eastern portion of Cleveland and Oklahoma counties. Quaternary alluvium is found in many undisturbed streambeds and channels located within the area.

Stratigraphy. Tinker AFB lies atop a sedimentary rock column composed of strata that ranges in age from Cambrian to Permian above a Precambrian igneous basement. Quaternary alluvium and terrace deposits can be found overlying bedrock in and near present-day stream valleys. At Tinker AFB, Quaternary deposits consist of unconsolidated weathered bedrock, fill material, windblown sand, and interfingering lenses of sand, silt, clay, and gravel of fluvial origin. The terrace deposits are exposed where stream valleys have downcut through older strata and have left them topographically above present-day deposits. Alluvial sediments range in thickness from less than a foot to nearly 20 feet.

Subsurface (bedrock) geologic units which outcrop at Tinker AFB and that are important to understanding groundwater and contaminant concerns at the Base consist of, in descending order, the Hennessey Group, the Garber Sandstone, and the Wellington Formation (Table 3-1). These bedrock units were deposited during the Permian age (230 to 280 million years ago) and are typical of redbed deposits formed during that period. The units are composed of a conformable sequence of sandstones, siltstones, and shales. Individual beds are lenticular and vary in thickness over short horizontal distances. Because lithologies are similar and because of a lack of fossils or key beds, the Garber Sandstone and the Wellington Formation

Table 3-1

Major Geologic Units in the Vicinity of Tinker AFB
(Modified from Wood and Burton, 1968)
Tinker AFB

(Page 1 of 2)

System	Series	Stratigraphic Unit	Thickness (feet)	Description and Distribution	Water-Bearing Properties
Q U A T E R N A R Y	P L E I S T O C E N E	Alluvium	0-70	Unconsolidated and interfingering lenses of sand, silt, clay, and gravel in the flood plains and channels of stream	Moderately permeable. Yields small to moderate quantities of water in valleys of larger streams. Water is very hard, but suitable for most uses, unless contaminated by industrial wastes or oil field brines.
	A N D R E C E N T	Terrace deposits	0-100	Unconsolidated and interfingering lenses of sand, silt, gravel, and clay that occur at one or more levels above the flood plains of the principal streams.	Moderately permeable. Locally above the water table and not saturated. Where deposits have sufficient saturated thickness, they are capable of yielding moderate quantities of water to wells. Water is moderately hard to very hard, but less mineralized than water in other aquifers. Suitable for most uses unless contaminated by oil field brines.

Table 3-1

(Page 2 of 2)

System	Series	Stratigraphic Unit	Thickness (feet)	Description and Distribution	Water-Bearing Properties
P E R M I A N	L O W E R	Hennessey Group (includes Kingman Siltstone and Fairmont Shale)	700	Deep-red clay shale containing thin beds of red sandstone and white or greenish bands of sandy or limey shale. Forms relatively flat to gently rolling grass-covered prairie.	Poorly permeable. Yields meager quantities or very hard, moderately to highly mineralized water to shallow domestic and stock wells. In places water contains large amounts of sulfate.
		Garber Sandstone	500±	Deep-red clay to reddish-orange, massive and cross-bedded fine-grained sandstone interbedded and interfingered with red shale and siltstone	Poorly to moderately permeable. Important source of groundwater in Cleveland and Oklahoma counties. Yields small to moderate quantities of water to deep wells; heavily pumped for industrial and municipal uses in the Norman and Midwest City areas. Water from shallow wells hard to very hard; water from deep wells moderately hard to soft. Lower part contains water too salty for domestic and most industrial uses.
		Wellington Formation	500±	Deep-red to reddish-orange massive and cross-bedded fine-grained sandstone interbedded with red, purple, maroon, and gray shale. Base of formation not exposed in the area.	

are difficult to distinguish and are often informally lumped together as the Garber-Wellington Formation. Together, they are about 900 feet thick at Tinker AFB. The interconnected, lenticular nature of sandstones within the sequence forms complex pathways for groundwater movement.

The surficial geology of the north section of the Base is dominated by the Garber Sandstone, which outcrops across a broad area of Oklahoma County. Generally, the Garber outcrop is covered by a thin veneer of soil and/or alluvium up to 20 feet thick. To the south the Garber Sandstone is overlain by outcropping strata of the Hennessey Group including the Kingman Siltstone and the Fairmont Shale (Bingham and Moore, 1975). Drilling information obtained as a result of geotechnical investigations and monitoring well installation confirms the presence of these units.

Depositional Environment. The Permian-age strata presently exposed at the surface in central Oklahoma were deposited along a low-lying north-south oriented coastline. Land features included meandering to braided sediment-loaded streams that flowed generally westward from highlands to the east (ancestral Ozarks). Sand dunes were common as were cut-off stream segments that rapidly evaporated. The climate was arid and vegetation sparse. Offshore the sea was shallow and deepened very gradually to the west. The shoreline position varied over a wide range. Isolated evaporitic basins frequently formed as the shoreline shifted.

Across Oklahoma, this depositional environment resulted in an interfingering collage of fluvial and windblown sands, clays, shallow marine shales, and evaporite deposits. The overloaded streams and evaporitic basins acted as sumps for heavy metals such as barium, chromium, lead, and iron. Oxidation of iron in the arid climate resulted in the reddish color of many of the sediments. Erosion and chemical breakdown of granitic rocks from the highlands result in extensive clay deposits. Evaporite minerals such as anhydrite (CaSO_4), barite (BaSO_4), and gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) are common.

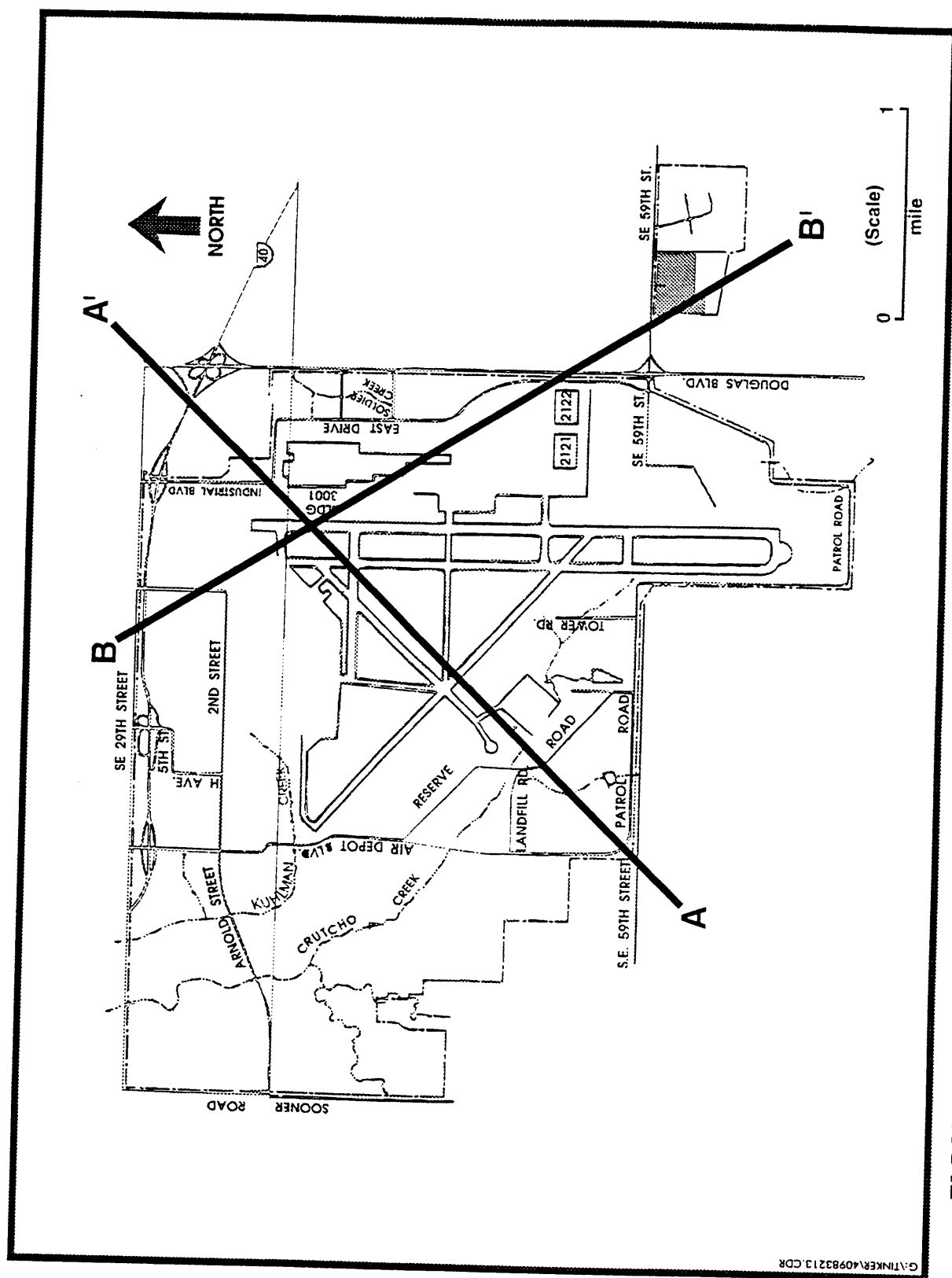
Around Tinker AFB, the Hennessey Group represents deposition in a tidal flat environment cut by shallow, narrow channels. The Hennessey Group comprises predominantly red shales that contain thin beds of sandstone (less than 10 feet thick) and siltstone. In outcrops, "mudball" conglomerates, burrow surfaces, and desiccation cracks are recognized. These units outcrop over roughly the southern half of the Base, thickening to approximately 70 feet

in the southwest from their erosional edge (zero thickness) across the central part of Tinker AFB.

In contrast, the Garber Sandstone and Wellington Formation around Tinker AFB consist of an irregularly interbedded system of lenticular sandstones, siltstones, and shales deposited either in meandering streams in the upper reaches of a delta or in a braided stream environment. Outcrop units north of Tinker AFB exhibit many small to medium channels with cut-and-fill geometries consistent with a stream setting. Sandstones are typically cross-bedded. Individual beds range in thickness from a few inches to about 50 feet and appear massive but thicker units are often formed from a series of "stacked" thinner beds. Geophysical and lithologic well logs indicate that from 65 to 75 percent of the Garber Sandstone and the Wellington Formation are composed of sandstone at Tinker AFB. The percentage of sandstone in the section decreases to the north, south, and west of the Base. These sandstones are typically fine to very fine grained, friable, and poorly cemented. However, where sandstone is cemented by red muds or by secondary carbonate or iron cements, local thin "hard" intervals exist along disconformities at the base of sandstone beds. Shales are described as ranging from clayey to sandy, are generally discontinuous, and range in thickness from a few inches to about 40 feet.

Stratigraphic Correlation. Correlation of geologic units is difficult due to the discontinuous nature of the sandstone and shale beds. However, cross sections demonstrate that two stratigraphic intervals can be correlated over most of the Base in the conceptual model. The location of these cross sections is shown in Figure 3-2. These intervals are represented on geologic cross-sections A-A' and B-B' in Figures 3-3 and 3-4, respectively. Section A-A' is roughly a dip section and B-B' is approximately a strike section. The first correlatable interval is marked by the base of the Hennessey Group and the first sandstone at the top of the Garber Sandstone. This interval is mappable over the southern half of Tinker AFB. The second interval consists of a shale zone within the Garber Sandstone, which in places is composed of a single shale layer and in other places of multiple shale layers. This interval is more continuous than other shale intervals and in cross sections appears mappable over a large part of the Base. It is extrapolated under the central portion of Tinker AFB where little well control exists.

Structure. Tinker AFB lies within a tectonically stable area; no major near-surface faults or fracture zones have been mapped near the Base. Most of the consolidated rock units of the Oklahoma City area dip westward at a low angle. A regional dip of 0.0057 to 0.0076 ft/ft in



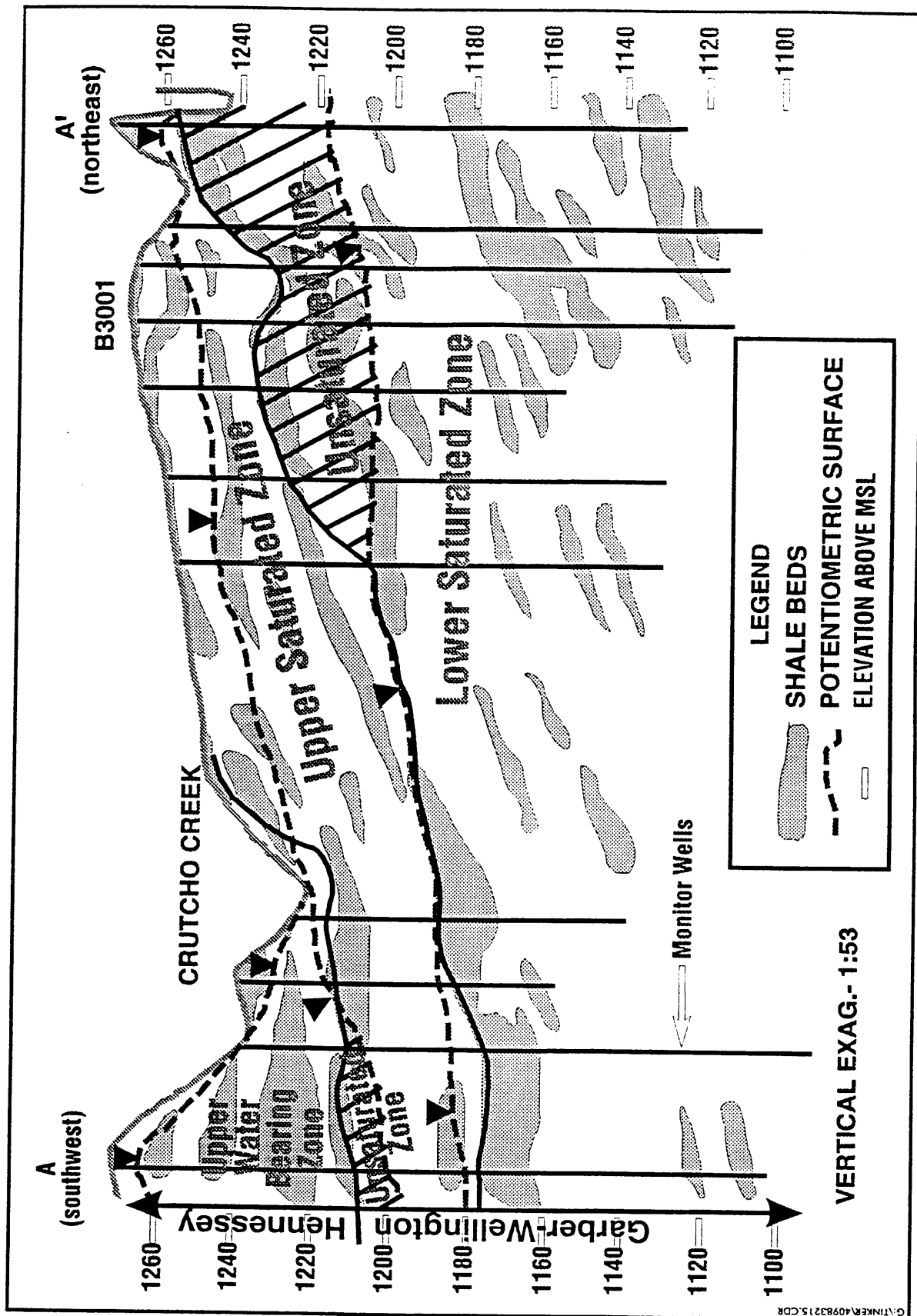


FIGURE 3-3 TINKER AFB GEOLOGIC CROSS SECTION A-A'

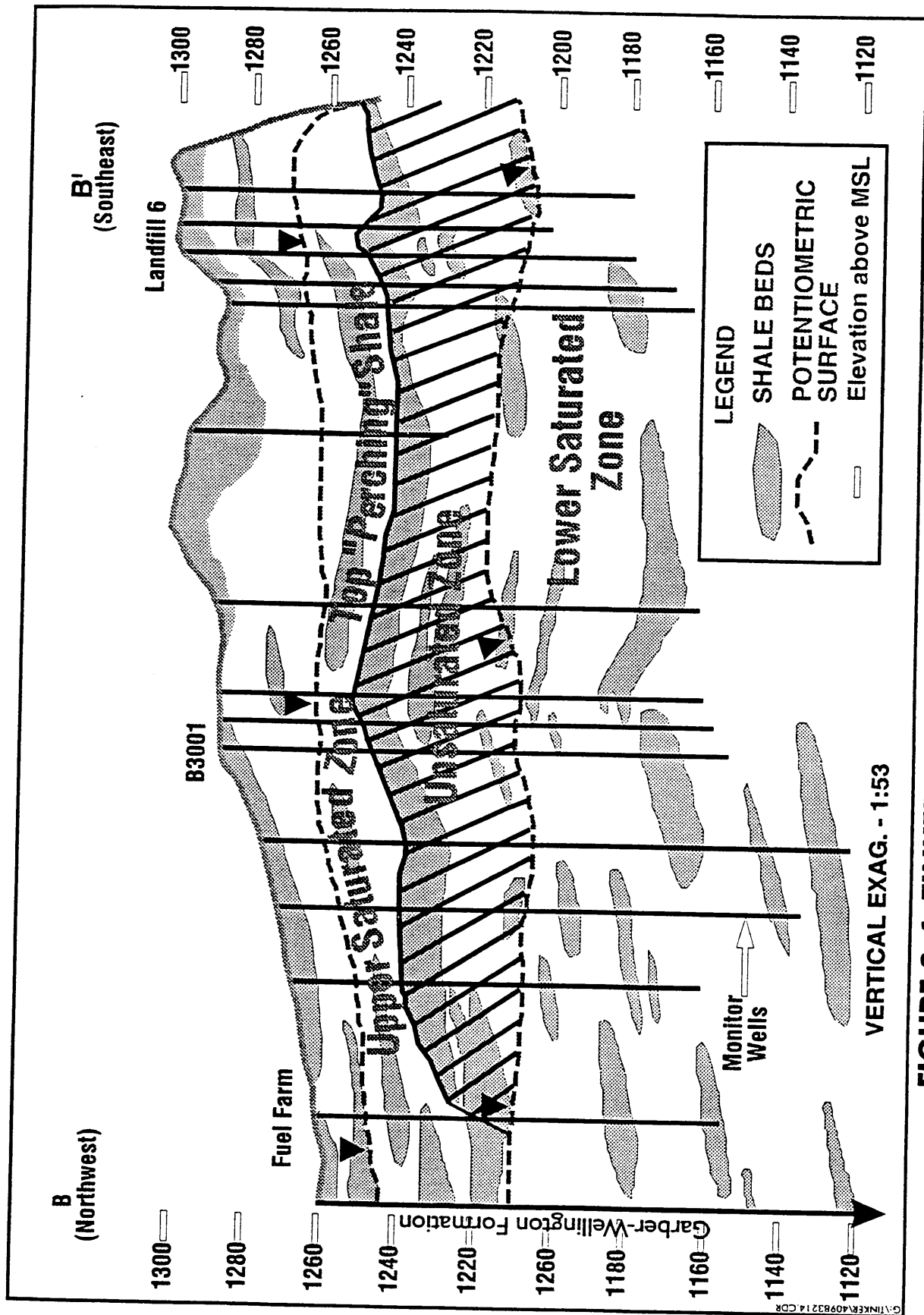


FIGURE 3-4 TINKER AFB GEOLOGIC CROSS SECTION B-B'

a generally westward direction is supported by stratigraphic correlation on geologic cross sections at Tinker AFB. Bedrock units strike slightly west of north.

Although Tinker AFB lies in a tectonically stable area, regional dips are interrupted by buried structural features located west of the Base. A published east to west generalized geologic cross section that includes Tinker AFB supports the existence of a northwest trending structural trough or syncline located near the western margin of the Base. The syncline is mapped adjacent to and just east of a faulted anticlinal structure located beneath the Oklahoma City Oil Field. The fault does not appear to offset Permian-age strata. There are indications that the syncline may act as a "sink" for some regional groundwater (southwest flow) at Tinker AFB before it continues to more distant discharge points.

3.2.2 Site Geology

The Drainage Spillway site is situated in the outcrop area of the Hennessey Group. The Phase I RFI conducted at the Drainage Spillway site focused on evaluating impacts, if any, to surface sediments and, did not include any investigation into subsurface geology conditions at the site. As such, the soils investigation at the site was limited to the sampling of two borings hand augered to 18-inch depth in the Drainage Spillway. These drainage ditch sediments varied from sandy clay with gravel chunks to clay with fine sand.

3.3 Hydrology

3.3.1 Regional/Tinker AFB Hydrology

The most important source of potable groundwater in the Oklahoma City metropolitan area is the Central Oklahoma aquifer system. This aquifer extends under much of central Oklahoma and includes water in the Garber Sandstone and Wellington Formation, the overlying alluvium and terrace deposits, and the underlying Chase, Council Grove, and Admire Groups. The Garber Sandstone and the Wellington Formation portion of the Central Oklahoma aquifer system is commonly referred to as the "Garber-Wellington aquifer" and is considered to be a single aquifer because these units were deposited under similar conditions and because many of the best producing wells are completed in this zone. On a regional scale, the aquifer is confined above by the less permeable Hennessey Group and below by the Late Pennsylvanian Vanoss Group.

Tinker AFB lies within the limits of the Garber-Wellington Groundwater Basin. Presently, Tinker AFB derives most of its water supply from this aquifer and supplements the supply by

purchasing from the Oklahoma City Water Department. The nearby communities of Midwest City and Del City derive water supplies from both surface sources and wells tapping the aquifer. Industrial operations, individual homes, farm irrigation, and small communities not served by a municipal distribution system also depend on the Garber-Wellington aquifer. Communities presently depending upon surface supplies such as Oklahoma City also maintain a well system drilled into the Garber-Wellington aquifer as a standby source of water in the event of drought.

Recharge of the Garber-Wellington aquifer is accomplished principally by percolation of surface waters crossing the area of outcrop and by rainfall infiltration in this same area. Because most of Tinker AFB is located in an aquifer outcrop area, the Base is considered to be situated in a recharge zone.

According to Wood and Burton (1968) and Wickersham (1979), the quality of groundwater derived from the Garber-Wellington aquifer is generally good, although wide variations in the concentrations of some constituents are known to occur. Wells drilled to excessive depths may encounter a saline zone, generally greater than 900 feet below ground surface. Wells drilled to such depths or those accidentally encountering the saline zone are either grouted over the lowest screens or may be abandoned.

Tinker AFB presently obtains its water supplies from a distribution system that is composed of 29 water wells constructed along the east and west Base boundaries and by purchase from the Oklahoma City Water Department. All Base wells are finished into the Garber-Wellington aquifer. Base wells range from 700 to 900 feet in finished depth, with yields ranging from 205 to 250 gallons per minute. The wells incorporate multiple screens, deriving water supplies from sand zones with a combined thickness from 103 to 184 feet (Wickersham, 1979).

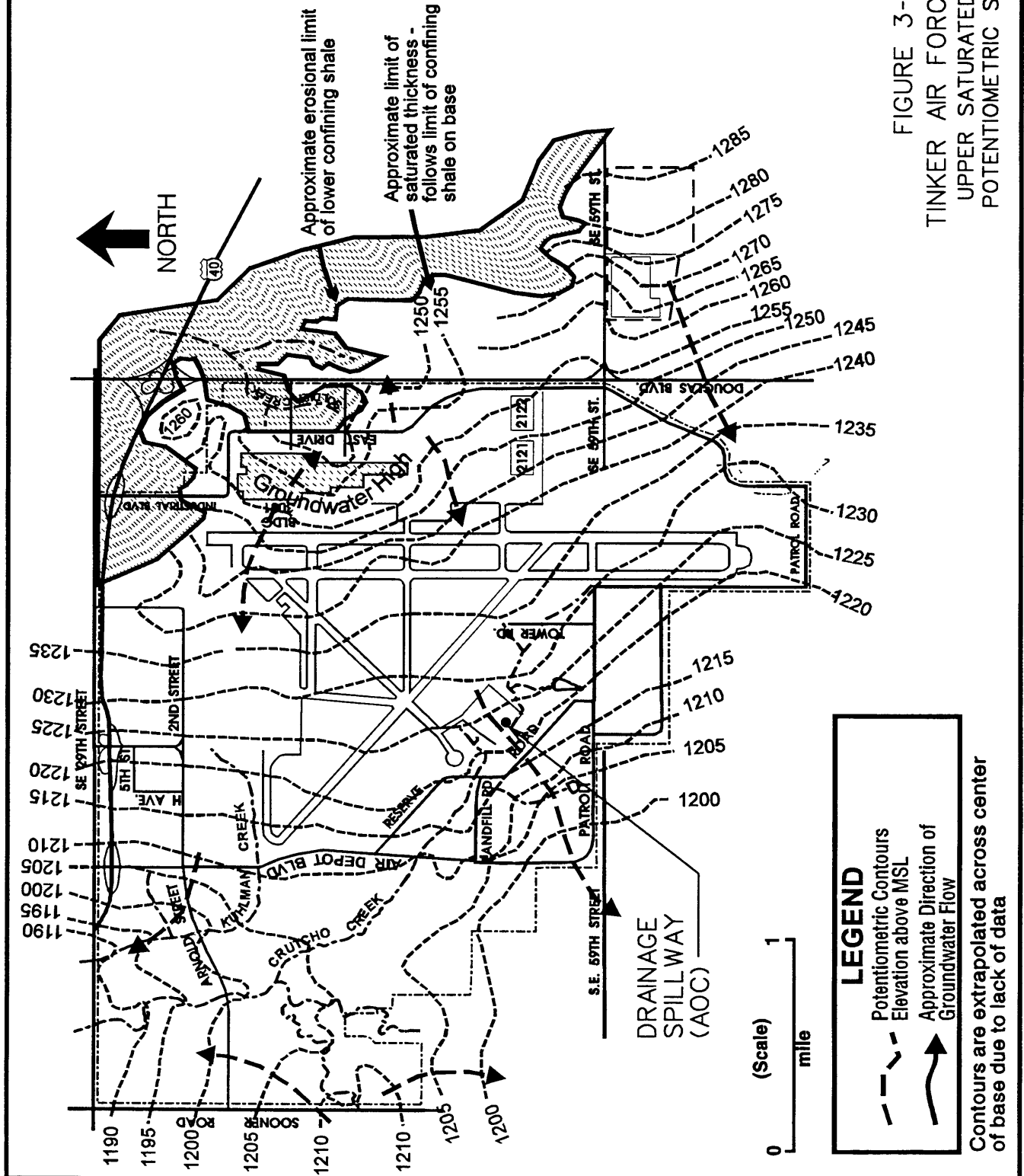
Conceptual Hydrologic Model. The hydrologic conceptual model of Tinker AFB involves a comprehensive review of available data, including those from direct measurement sources (borings, water level measurements, pump/slug tests, stream studies) as well as indirect sources (aerial photographs, topographic maps, published reports). The hydrologic system at Tinker AFB is complex, but the model provides both an approximation of depth to water and an estimated direction of groundwater movement and is therefore useful as a basis for designing field investigations. As information is derived from investigations the model is continually updated and refined.

Groundwater. As a result of ongoing environmental investigations and the approximately 450 groundwater monitoring wells installed on the Base during various investigations, a better understanding of the specific hydrological framework has emerged. The current conceptual model developed by Tinker AFB (Tinker, 1993), based on the increased understanding of the hydrological framework, has been revised from a previous model adopted by the U.S. Army Corps of Engineers (USACE). Previous studies reported that groundwater was divided into four water bearing zones: the perched aquifer, the top of regional aquifer, the regional aquifer, and the producing zone. In the current model, two principal water table aquifer zones and a third less extensive zone have been identified. The third is limited to the southwest quadrant. The third aquifer zone consisted of saturated siltstone and thin sandstone beds in the Hennessey Shale and equates to the upper water bearing zone (UWBZ) described by the USACE at Landfills 1 through 4 (SWMUs-3 through -6). In addition, numerous shallow, thin saturated beds of siltstone and sandstone exist throughout the Base. These beds are of limited areal extent and are often perched.

In the current conceptual hydrologic model by Tinker AFB, an upper saturated zone (USZ) and a lower saturated zone (LSZ) are recognized in the interval from ground surface to approximately 200 feet. Below this depth is found the producing zone from which the Base draws much of its water supply. Figure 3-5 shows the potentiometric surface for the USZ and Figure 3-6 shows the potentiometric surface for the LSZ. The USZ exists under water table (unconfined) conditions, but may be partially confined locally. Conditions in the LSZ are difficult to determine due to screen placement and overlie long sand packs below the screen interval.

The USZ is found at a depth of 5 to 70 feet below ground surface and has a saturated thickness ranging from less than 1 foot at its eastern boundary to more than 20 feet in places west of Building 3001. The USZ is erosionally truncated by Soldier Creek along the northeastern margin of Tinker AFB. This aquifer zone is considered to be a perched aquifer over the eastern one-third of Tinker AFB, where it is separated from the LSZ by an underlying confining shale layer and a vadose zone. The confining interval extends across the entire Base, but the vadose zone exists over the eastern one-third of this area. The available hydrologic data indicate that the vadose zone does not exist west of a north-south line located approximately 500 to 1,000 feet west of the main runway; consequently, the USZ is not perched west of this line. However, based on potentiometric head data from wells screened above and below the confining shale layer, the USZ remains a discrete aquifer zone distinct from the LSZ even over the western part of the Base. In areas where several shales interfing-

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DRAWN BY: L. STOUT	DRAWN BY:	ENGR, CHCK, BY:	PROJ. MGR.: J. TAYLOR	PROJ. NO.: 409832



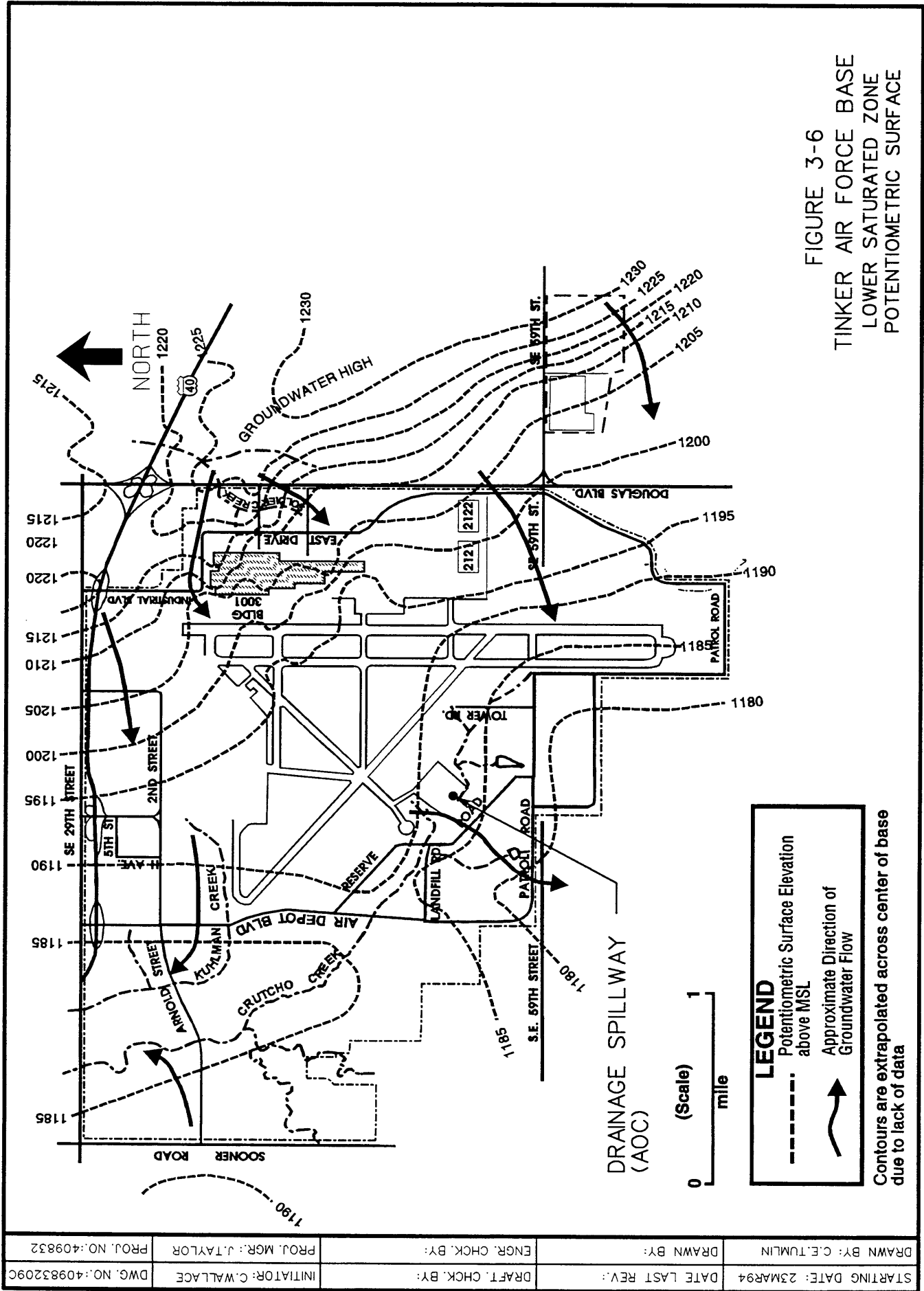


FIGURE 3-6
TINKER AIR FORCE BASE
LOWER SATURATED ZONE
POTENTIOMETRIC SURFACE

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DRAWN BY: C.E.TUMLIN			

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ger to form the lower confining interval rather than a single shale bed, "gaps" may occur. In general, these gaps are not holes in the shale but are places where multiple shales exist that are separated by slightly more permeable strata. Hydrologic data from monitoring wells indicate that these zones allow increased downward flow of groundwater above what normally leaks through the confining layer.

The LSZ is hydraulically interconnected and can be considered one aquifer zone down to approximately 200 feet. This area includes what was referred to by the USACE as the top of regional and regional zones. Hydrologic data from wells screened at different depths at the same location within this zone, however, provide evidence that locally a significant vertical (downward) component of groundwater flow exists in conjunction with lateral flow. The magnitude of the vertical component is highly variable over the Base. Preliminary evidence suggests that the LSZ is hydraulically discrete from the producing zone. Due to variations in topography the top of the lower zone is found at depths ranging from 50 to 100 feet below ground surface under the eastern parts of the Base and as shallow as 30 feet to the west. Differences in potentiometric head values found at successive depths are due to a vertical (downward) component of groundwater flow in addition to lateral flow and the presence or absence of shale layers that locally confine the aquifer system. The LSZ extends east of the Base (east of Soldier Creek) beyond the limits of the USZ where it becomes the first groundwater zone encountered in off-Base wells. Because of the regional dip of bedding, groundwater gradient, and topography, the LSZ just east of the Base is generally encountered at depths of less than 20 feet.

Across the central portion of Tinker AFB, the unsaturated zone separating the USZ and LSZ disappears where the intervening shale layer dips below the surface of the LSZ. The disappearance of the unsaturated zone is supported by data from recently completed wells just west of the north-south runway and near Base Operations and by data from wells in the southwest portion of the Base. Measured water levels in two of the new wells show that the LSZ is confined at these locations by the shale separating the USZ and LSZ. No unsaturated interval is present.

To the southwest, measured water levels from wells screened in the Garber Sandstone at Landfills 2 and 4, SWMUs-4 and -6, which correspond in the conceptual model to the USZ under the east part of the Base, show that the USZ remains unconfined or is partially confined. This zone is essentially the first water level encountered in the Garber Sandstone on the Base. Potentiometric data from wells in the southwest screened in deeper intervals,

that correspond roughly to the LSZ to the east indicate that the LSZ is confined in this area. Data from wells screened at various intervals to a depth of about 90 feet in this area also show that no vadose (unsaturated) zone separates the USZ from the rest of the aquifer. The upper and lower zones cannot be distinguished in this area except by correlating geologic units across Base.

Farther to the southwest of the landfills, near the edge of the Base, another unsaturated zone is found separating groundwater in the Hennessey Group from the Garber-Wellington aquifer. This unsaturated zone is not continuous with that encountered on the east side of the Base. The groundwater in the overlying Hennessey water bearing zone represents the third groundwater zone of more limited areal extent mentioned previously. This shallow unconfined aquifer system is located on a topographic high (groundwater divide) in the strata of the Hennessey Group. Radial flow of groundwater off the divide toward nearby tributaries of Crutcho Creek is suggested from limited water level measurements. Additional shallow perched saturated zones of limited areal extent are thought to exist in other sandstone and siltstone beds within the Hennessey water bearing zone. Along the western margin of Tinker AFB west of Crutcho Creek, the shallow groundwater in the Hennessey water bearing zone and probably groundwater in the most shallow saturated zones in the Garber-Wellington aquifer appears to flow toward stream tributaries, and therefore, does not follow regional flow patterns to the west/southwest.

The aquifer zones in the conceptual model are hydraulically connected, although sometimes only to a very local extent, either directly as in the west part of the Base or indirectly through leakage and/or recharge patterns related to local streams. Because Tinker AFB is located in a recharge zone for the Central Oklahoma aquifer both horizontal and vertical (downward) components of groundwater flow exist. Measured potentiometric levels from well clusters with screens and filter packs placed at varying depths within the LSZ show that hydraulic heads decrease with depth and that the magnitude of the vertical component of flow varies with location. This finding is particularly important to recognize where data from these wells are being used to generate potentiometric contour maps.

Although the variability in the geology and the recharge system at Tinker AFB makes it difficult to predict local flow paths, Central Oklahoma aquifer water table data taken from the 1992 USGS Hydrologic Atlas show that regional groundwater flow under Tinker AFB varies from west/northwest to southwest depending on location. This finding is supported by contoured potentiometric data from Base monitoring wells, which show groundwater

movement in the upper aquifer zones to generally follow regional dip. Measured normal to potentiometric contours, groundwater flow gradients range from 0.0019 to 0.0057 ft/ft. However, because flow in the near surface portions of the aquifer at Tinker AFB is strongly influenced by topography, local stream-based levels, complex subsurface geology and location in a recharge area, both direction and magnitude of groundwater movement is highly variable. The interaction of these factors not only influences regional flow, but gives rise to complicated local, often transient, flow patterns at individual sites.

Several examples demonstrate this variability. Historical water level data around Crutch Creek indicate that groundwater flow in that area is predominantly to the southwest. However, during high flow conditions bank recharge occurs and shallow local flow patterns near the creek may be reversed. This pattern is probably in effect at other streams as well. In the northeast quadrant of the Base, several factors contribute to groundwater "mounding" in the USZ and to formation of a groundwater high in the LSZ. This mounding leads to radial or semiradial groundwater flow at shallow depths. Finally, in the northeast part of the Base where sufficient data exist, comparison of potentiometric contours from successively deeper levels in the LSZ suggests that groundwater flow directions change with depth, gradually turning from west/southwest to northwest. This change in regional flow is attributed either to effects of pumping from deep water supply wells in the area and/or to the presence of the Deep Fork River located to the north. This river, along with the Canadian River south of Tinker AFB, has been demonstrated by the USGS to act as a major discharge point for regional groundwater in Central Oklahoma.

Surface Water. The interaction of surface water with groundwater is an important factor in predicting local groundwater flow patterns at Tinker AFB. Although no technical stream study data are presently available to determine what degree of interaction occurs between streams and groundwater, some qualitative observations provide clues to the importance of this system. The direction of stream flow on Tinker AFB appears to be controlled largely by a topographic divide that extends from southwest to northeast across the south part of the Base. Streams that originate on the north side of the divide flow to the north. These streams include Soldier Creek, Crutch Creek, and Kuhlman Creek. Elm Creek, which has its origin on the southeast side flows to the south. Streams that flow northward become perennial before leaving the Base and with no other constant source of water available are considered to be recharged by the aquifer (gaining streams). Some data indicate, however, that these streams become dry north of the Base during periods of lower precipitation and lose water to the aquifer (losing streams). Information from wells and piezometers near the ponded section

of Soldier Creek at the industrial wastewater treatment plant also suggests that the pond contributes to the groundwater (a losing stream) in the LSZ at that location. Portions of Soldier Creek tributaries (near their headwaters, off-Base) flow only intermittently and probably recharge the aquifer through infiltration during periods of higher precipitation. Finally, where groundwater and stream elevations are the same, the observed direction of groundwater flow may be affected by transient factors such as bank storage from periods of increased precipitation.

Man-Made Structures. In the conceptual model of Tinker AFB it is recognized that man-made features such as buried utilities (storm drains, waste lines) may further complicate the shallow groundwater picture. An additional problem encountered in generating the model involves improper monitoring well construction practices that not only may contribute preferred pathways for groundwater (and contaminant) movement where wells have multiple screens or overlie long filter packs, but also often provide nonrepresentative, biased groundwater, and sample data.

The complex groundwater system at Tinker AFB makes correct placement and construction of monitoring and extraction wells critical. A good understanding of the conceptual hydrologic framework is essential to obtain representative data and to minimize errors. An integrated hydrologic conceptual model provides an overview of the groundwater system and leads in turn to more effective site project management.

3.3.2 Site Hydrology

A hydrologic investigation was not conducted at the Drainage Spillway in this Phase I RFI. It is known, however, that the Drainage Spillway feeds into Crutcho Creek. At Tinker AFB, Crutcho Creek is believed to be a gaining stream recharged by the uppermost aquifer. Therefore, it is unlikely that any constituents carried by the creek would migrate into the aquifer.

3.4 Soils

The surface soils of Tinker AFB have been studied by the U.S. Department of Agriculture (USDA), Soil Conservation Service (1969) and by several soil boring projects conducted for geotechnical (foundation construction) investigations. Surface soils of the installation area are predominantly of two basic types: residual and alluvial. The three major soil associations mapped within installation limits are Darrell-Stephenville, Renfrow-Vernon-Bethany, and Dale-Canadian-Port. The residual soils associations (Table 3-2), Darrell-Stephenville and

Table 3-2

**Tinker AFB Soil Associations
(Source: USDA, 1969)**

Association	Description	Thickness (in.)	Unified Classification ^a	Permeability (in./hr)
Darrell-Stephenville: loamy soils of wooded uplands	Sandy loam Sandy clay loam Soft sandstone (Garber Sandstone)	12-54	SM,ML,SC	2.0-6.30
Renfrow-Vernon-Bethany: loamy and clayey soils on prairie uplands	Silt loam - clay Clay loam Shale (Fairmont Shale)	12-60	ML,CL,MH,CH	<0.60-0.20
Dale-Canadian-Port: loamy soil on low benches near large streams	Fine sandy loam Silty clay loam Loam Clay loam	12-60	SM,ML,CL	0.05-6.30

^aUnified classifications defined in U.S. Bureau of Reclamation, 5005-86.

Renfrow-Vernon-Bethany are the products of the weathering of underlying bedrock. The alluvial materials of the Dale-Canadian-Port association are stream-deposited silts and sands, whose occurrence is typically restricted to floodplains of area streams.

4.0 Description of Investigative Methods

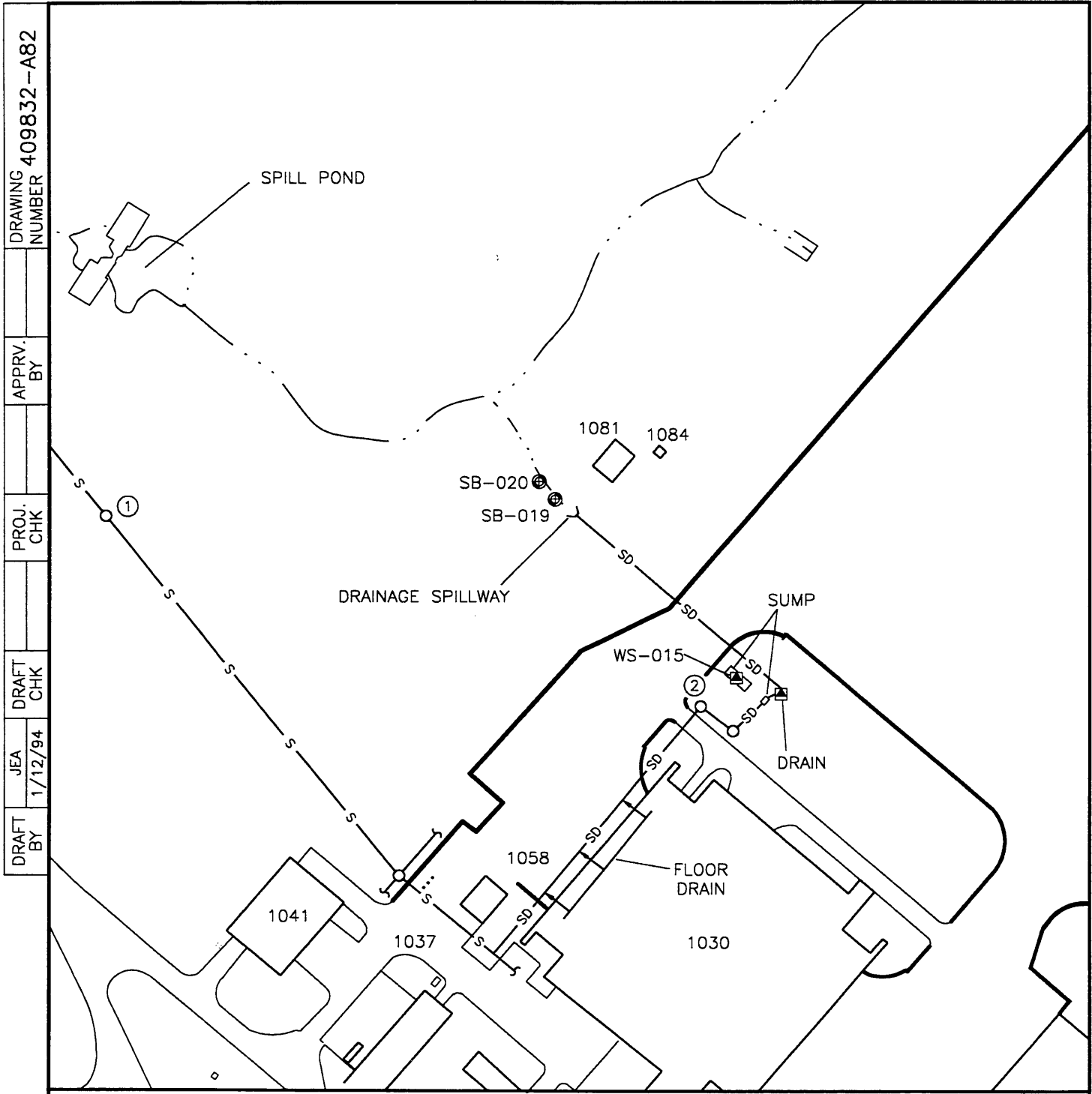
The Phase I investigation of the Drainage Spillway focused on determining whether a release from Building 1030 to the Drainage Spillway has occurred. All activities conducted during the field investigation program were performed in accordance with the Work Plan, the Data Management Plan, the Data Collection Quality Assurance Plan, the Health and Safety Plan, and their Amendments. Field investigation activities described in the following sections included investigation of the drainage system from Building 1030 to determine if the Drainage Spillway receives runoff or discharge from the building. In addition, a source/wastewater sample was collected from a sump located east of Building 1030, which may drain into the Drainage Spillway. Finally, two soil samples were collected from the Drainage Spillway (Figure 4-1). These investigative activities are summarized in Table 4-1.

4.1 Building 1030 Drainage System Configuration

Storm drains collect runoff from the Building 1030 area and empty through the Drainage Spillway to the spill pond. In order to determine if Building 1030 wash water flows into the storm drains, thus into the spill pond, flow/dye testing was performed at the floor drainage trench inside the building.

The first test introduced water colored with yellow dye into the drainage system of Building 1030. Observations were made at the outflow to the Drainage Spillway, the two sumps east of Building 1030, and several sewer and drainage lines located near the sumps for changes in the flow rate or presence of the yellow dye. No change in flow rate or yellow dye was observed in any of the above locations. Although this first dye test did not reveal the ultimate destination of the Building 1030 wash water, it did prove that the trench drain is not connected to the sump or the Drainage Spillway.

The second dye test was conducted on March 3, 1994. Water and bright green dye were introduced into the flow grates inside Building 1030 and 27 minutes later a dye plume was observed in a sanitary sewer manhole located approximately 600 feet northwest of the building. This test proved that the water from the Building 1030 wash area drains to the sanitary sewer system.



DRAWING NUMBER 409832-A82

APPRV. BY

PROJ. CHK

DRAFT CHK

JEA 1/12/94

DRAFT BY

Map Source: TINKER AFB

NOTES:

- ① DYE PLUME OBSERVED IN THIS MANHOLE DURING DYE/FLOW TESTING
- ② NO WATER OBSERVED IN THIS MANHOLE DURING DYE/FLOW TESTING



0 150
FEET

LEGEND

- SB-019 SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- WS-015 SOURCE SAMPLE LOCATION AND IDENTIFICATION NUMBER
- MANHOLE
- S — SEWER
- SD — STORM DRAINAGE
- - - DRAINAGE
- CONTOUR INTERVAL

FIGURE 4-1
DRAINAGE SPILLWAY
SITE MAP WITH LOCATIONS
OF SOURCE SAMPLES
AND SOIL BORINGS

PREPARED FOR
TINKER AFB
OKLAHOMA

Do Not Scale This Drawing

Table 4-1

**Summary of RFI Field Activities
AOC, Drainage Spillway, Tinker AFB**

Type of Activity	Number of Locations	Cumulative Footage of Borings/Wells	Average Footage per Boring/Well	Number of Samples Collected for Chemical Analysis					Analyses Performed
				Normal Samples	Duplicates	Rinsates	Field Blanks	Totals	
Soil Borings	2	3	1.5	2	0	0	0	2	VOC, SVOCs, Metals
Source Characterization Washwater Samples	1	n/a	n/a	1	1	0	1	3	VOCs, SVOCs, TPH, TOC, Metals

Notes:

VOCs - Volatile organic compounds - EPA Method 8240

SVOCs - Semivolatile organic compounds - EPA Method 8270

Metals - EPA Method 6010-Al, Ag, As (EPA Method 7060), Ba, Be, Cd, Cr, hexavalent Cr (EPA Method 7196), Cu, Fe, Pb (EPA Method 7421), Ni, Zn, and Hg (EPA Method 7471)

TPH - Total petroleum hydrocarbon - EPA Method 418.1/9071

TOCs - Total organic carbon - EPA Method 415.1

4.2 Source/Wastewater Samples

One wastewater sample was collected from sample location WS-015, the sump located north of Building 1030. Originally, the work plan called for sampling of WS-014, another sump in the vicinity. That sample location was not sampled, however, because there was only approximately 2 inches of water in the sump and no water could be collected in the bailer. WS-015 was sampled using a disposable polyvinyl chloride (PVC) bailer and was analyzed for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), total petroleum hydrocarbons (TPH), total organic carbon (TOC), and priority pollutant metals.

4.3 Soil Borings

Two soil borings, SB-19 and SB-20, were collected in the Drainage Spillway. The borings were drilled with a hand auger to 18 inches in depth. A soil sample was collected from the interval that had the highest indication of contamination based on photoionization detector/flame ionization detector (PID/FID) readings, odor, and visual observation. The samples were analyzed for VOCs, SVOCs, and priority pollutant metals. A description of the soil samples collected is contained in the Sample Collection Log (Appendix A).

5.0 Investigation Results

The following sections provide an evaluation of data quality and the results of the RFI performed at the Drainage Spillway. Section 5.1 reviews the procedures and methods used to ensure data quality and useability. Section 5.2 provides a discussion of the source characterization and the potential of Building 1030 as a contributing source for contamination of the Drainage Spillway. Section 5.3 provides details regarding the contaminant characterization via analysis of the results of the soils investigation. Groundwater was not encountered, nor investigated at the Drainage Spillway and thus will not be discussed.

5.1 Data Quality Evaluation

The quality of the analytical data used for the RFI must be sufficient to support the associated risk management decisions. Data quality is ensured through adherence to Data Quality Objectives (DQO) and the sampling and analysis program outlined in the Data Collection Quality Assurance Plan (DCQAP) (IT, 1993b). The DCQAP identifies sampling locations, sampling methods, DQOs, field and laboratory quality control testing, analytical methods and reporting, and data evaluation and verification. The quality control of field and laboratory activities; the assessment of precision, accuracy, and comparability of the data; and the verification of the data are the most significant activities designed to ensure compliance with the DQOs.

5.1.1 Field Quality Control

Field quality control testing involved the collection of control samples to aid in evaluating inaccuracies which may be induced by field activities. These control samples include:

- **Field Blanks.** A field blank is an amount of water, gas, or solid that is provided to demonstrate the absence of contamination during sampling. Field blanks were only collected for groundwater and waste samples.
- **Trip Blanks.** Volatile organics samples are susceptible to contamination by diffusion of organic contaminants into the sample container. Therefore, trip blanks were analyzed to monitor for sample contamination during shipment and storage. No trip blanks were obtained for soil samples, due to the dissimilarity in matrix between the blanks and the actual samples.
- **Rinsate Blanks.** A rinsate blank is a volume of rinse solution (e.g., deionized distilled laboratory water or organic solvent) used to rinse a sampling tool which contacts more than one sample. The rinse solution was collected after the

sampling tool was used and cleaned, to demonstrate that no residual contamination remained on the tool to carry over to the next sample.

- **Field Duplicates.** Duplicate analyses were performed to evaluate the precision of analysis. Both field and laboratory duplicates were taken and analyzed. Results of these analyses were used to determine the relative percent difference (RPD) between replicate samples.

5.1.2 Laboratory Quality Control

Laboratory quality control testing involved the use of control samples to aid in evaluating quality control errors which may be induced by laboratory activities. The control samples include:

- **Method Blanks.** A method blank is a volume of deionized and distilled laboratory water for liquid samples, or a purified solid matrix for soil/sediment samples, carried through the entire analytical procedure to identify contaminants introduced during the procedure.
- **Bottle Blanks.** At a frequency of 1 percent or greater, laboratory-prepared sample containers were tested to verify that the container cleaning procedure is performed acceptable. Parameters of concern for the particular container were tested (e.g., metals for plastic containers).
- **Laboratory Blanks.** Distilled water-filled volatile organic analysis (VOA) vials were stored in the laboratory using the same method of storage used for field samples. If the field and trip blanks contained high concentrations of contaminants, the laboratory blank was analyzed to identify the source of contamination.
- **Matrix Spikes.** To evaluate the effect of sample matrix on analytical methodology accuracy, a separate sample aliquot was spiked with the analyte of interest and analyzed with approximately ten samples or, if a smaller number of samples are associated with a test series, for each group of samples.
- **Surrogate Standards.** Surrogate standards are compounds added to gas chromatography/mass spectrometry (GC/MS) standards, blanks, and samples prior to extraction or purging to monitor the recovery efficiencies of the sample preparation and analytical procedures on a sample-by-sample basis.

5.1.3 Evaluation of Precision and Accuracy

As part of the analytical quality control testing program, quality control sample results were used to apply precision and accuracy criteria for each parameter that was analyzed. When the

analysis of a sample set was completed, the quality control data generated were evaluated based on the following criteria:

- **Method Blank Evaluation.** The method blank results were evaluated for high readings characteristic of background contamination. If high blank values were observed, laboratory glassware and reagents were checked for contamination and the analysis of future samples halted until the system could be evaluated.
- **Trip, Field, Laboratory, and Rinsate Blank Evaluation.** Trip, field, laboratory, and rinsate blank results were evaluated for high readings similar to the method blanks described above. If high blank readings were encountered, the procedure for sample collection, shipment, and laboratory analysis would be reviewed.
- **Duplicate Sample Evaluation.** Duplicate sample analysis was used to determine the precision of the analytical method for the sample matrix. The duplicate results will be used to calculate the precision as defined by the RPD.
- **Matrix Spike Evaluation.** The observed recovery of the spike versus the theoretical spike recovery was used to calculate accuracy as defined by the percent recovery (%R).
- **Surrogate Standard Evaluation.** The results of surrogate standard determinations were compared with the true values spiked into the sample matrix prior to purging or extraction and analysis, and the percent recoveries of the surrogate standards were determined.
- **Comparability Between Data Sets.** Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. Comparability for sampling and analysis was achieved by specifying and using only well-recognized techniques and accepted standard EPA methods and procedures for sampling and analysis reporting of representative samples.

5.1.4 Data Verification

Data packages and parameters were evaluated against the following criteria to ensure data validity prior to use:

- Sampling documentation (e.g., sample collection log, Chain-of-Custody Form, and Request for Analysis Form) matches samples submitted to samples analyzed.
- Chain-of-Custody Forms are complete.
- Sample identification summary for each sample is present.
- Analytical results for each sample include correct units, detection limits, method used, date sampled, date extracted, date analyzed, dilutions noted.

- Holding times were met.
- Data on field and laboratory duplicate samples for RPDs were within QC limits.
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries were within QC limits.
- Method blanks were within control limits.

5.1.5 Data Useability

The data verification did not identify any reoccurring problems with analytical procedures or analytical reporting. Precision and accuracy for each analytical method as demonstrated by the evaluation or surrogate recoveries, laboratory control samples, MS, and MSD recoveries were satisfactory. The sample identification summaries for all samples and methods were present and complete. No data were found to be invalid. All deficiencies encountered were minor and did not affect the overall quality of the data, since other DQOs were met. Deficiencies were generally the result of matrix interference.

The analytical data generated from the RFI are of sufficient quality to make evaluations and support recommendations.

5.2 Source Characterization

It was previously unknown whether the Building 1030 drains were connected to the Drainage Spillway and if so whether a discharge from the building to the Drainage Spillway had occurred. The sampling plan for the Drainage Spillway directed that a sample be taken from the sump north of the building and held for chemical analysis if dye testing or records indicated a link between the Building 1030 drains and the Drainage Spillway. Although both dye tests indicated that the Building 1030 drains were not connected to the Drainage Spillway, the sump water sample was analyzed for VOCs, SVOCs, metals, TOC, and TPH.

The analytical results of the detected analytes for the source sample are presented in Table 5-1. Appendix B contains a complete listing of the analytical results. Organic constituents found in the water were tetrachloroethene at 16 micrograms per liter ($\mu\text{g/L}$), trichloroethene at 11 $\mu\text{g/L}$, cis-1,2-dichloroethene at 110 to 120 $\mu\text{g/L}$, and TOC at 8.5 to 11 mg/L . Metals found in the water were zinc at 0.027 mg/L , iron at 0.11 mg/L , and lead at 0.0077 to 0.012 mg/L .

Table 5-1

**Analytical Results
for Source Sample
AOC, Drainage Spillway, Tinker AFB**

Parameters	Well/Boring: Sample ID: Depth in Feet:	WS-015 A1512 0 - 0		WS-015 A1513 0 - 0	
		Result	QFR	Result	QFR
Metals (mg/L)					
Iron				0.11	
Lead - Graphite Furnace		0.012		0.0077	
Zinc		0.027			
TOC (mg/L)					
Total Organic Carbon		11		8.5	
Volatiles (ug/L)					
Tetrachloroethene		16		16	
Trichloroethene		11		11	
cis-1,2-Dichloroethene		120		110	
B = Analyte was also found in sample blank E = Concentration exceeds instrument calibration range for that specific analysis J = Concentration is an estimated value N = Sample is outside of Matrix Spike QC Limit < = Not detected QFR = Qualifier Analytical data has not been validated					

5.3 Contaminant Characterization Results

5.3.1 Establishment of Surficial Soil Background Concentrations

Background soil concentrations for trace metals were determined based on a study performed by the USGS (1991). The study area was confined to approximately four counties in central Oklahoma. Tinker AFB lies at the approximate center of this area. A total of 293 B-horizon soil samples were collected throughout this area. Soil samples were collected at the top of the B-horizon, which was usually 20 to 30 centimeters below the surface but ranged from 3 to 50 centimeters below the surface. For site-specific analytes for which the USGS offered no background value, a site-specific background value was selected for comparison. This site-specific background sampling location was typically from an upgradient monitoring well boring.

The use of B-horizon soil as selected by the USGS for metals background concentrations in soil is conservative in that the soil sampled does not reflect all possible anthropogenic influences. Most of the samples were obtained from hill crests and well drained areas in pasture and forested land, well away from roadways to minimize contamination from vehicular emissions (i.e., nearly "pristine" areas). Trace metal inputs to the study site soils on Base, however, will come from anthropogenic sources outside of the study area, in addition to those sources related to disposal activities or operations within the confines of the study site. Responsibility may therefore be taken for more trace metal impacts than are actually attributable to a given site.

An additional level of conservatism was added in the manner in which the site-specific metals concentrations were compared to the background levels. Typically, the environmental concentrations of trace metals at study sites are represented by the arithmetic upper 95th confidence interval on the mean of a normal distribution. This upper 95th confidence interval value is then compared to the background values. The intent of this typical approach is to estimate a Reasonable Maximum Exposure case (i.e., well above the average case) that is still within the range of possible exposures.

To expedite this comparison and establish greater conservatism, the maximum concentration found at the site of concern, rather than the upper 95th confidence interval value, was compared to the USGS background values. If the environmental concentration of a particular analyte was below or within the minimum-maximum range of the USGS background concentrations, that analyte was considered to be naturally occurring and of no further

concern to this investigation. Given the conservative approach of the comparisons, site-specific metals concentrations would have to significantly exceed the USGS background levels and be attributable to operations at the site before they would be considered a contaminant of concern.

The numerical comparison of site-specific metals concentrations to the USGS background concentrations is presented in the following section.

5.3.2 Soil Characterization

Soils investigation at the site was limited to the sampling of two soil borings hand augered to an 18-inch depth along the Drainage Spillway, which connects the Building 1030 storm drain outfall with Crutch Creek and the spill pond. These samples were analyzed for VOCs, SVOCs, and priority pollutant metals (aluminum, arsenic, barium, beryllium, cadmium, chromium, chromium VI, copper, iron, lead, mercury, nickel, silver, and zinc). The sediments varied from sandy clay with gravel chunks to clay with fine sand. No discoloration of surface soils was evident.

The analytical results for the detected analytes for the soil samples are presented in Table 5-2. Appendix A contains a complete listing of analytical results. No organic compounds were detected in the soils above the method reporting limit in the soils. A number of metals were found in the soils but at levels within the ranges found in the United States Geological Survey (USGS) Report, "Elemental Composition of Surficial Materials from Central Oklahoma," (1991). The comparison of the metals concentrations in soils to the USGS data is presented in Table 5-3.

A soil boring summary is provided as Table 5-4.

Table 5-2
Analytical Results
for Soil
AOC, Drainage Spillway, Tinker AFB

Well/Boring:		SB-019		SB-020	
Sample ID:		A1506		A1507	
Depth in Feet:		.5 - 1		0 - .5	
Parameters		Result	QFR	Result	QFR
Metals (mg/kg)					
Aluminum		7200	N	9000	N
Arsenic - Graphite Furnace		4.4	N	4.6	N
Barium		130	N	76	N
Beryllium		1.1		1.1	
Chromium		11		13	
Copper		9		9.8	
Iron		10000	N	13000	N
Lead - Graphite Furnace		8.6	N	8.6	N
Nickel		17	N	20	N
Zinc		20		25	
B = Analyte was also found in sample blank E = Concentration exceeds instrument calibration range for that specific analysis J = Concentration is an estimated value N = Sample is outside of Matrix Spike QC Limit < = Not detected QFR = Qualifier Analytical data has not been validated					

Table 5-3

**Soil Metals Background Comparison
AOC, Drainage Spillway, Tinker AFB**

Analyte	Site	USGS Background Concentration	
	Maximum Value (ppm)	Detection Limit (ppm)	Range (ppm)
Aluminum	9,000	50	3,800-89,000
Arsenic	4.6	0.1	0.6-21
Barium	130	1	47-6,400
Beryllium	1.1	1	<1-3
Chromium	13	1	5-110
Copper	9.8	1	<1-59
Iron	13,000	50	1,800-58,000
Lead	8.6	4	<4-27
Nickel	20	2	<2-61
Zinc	25	2	3-79

Table 5-4

**RFI Soil Borings Summary
AOC, Drainage Spillway, Tinker AFB**

Boring ID	Date Completed	Boring Coordinates		Surface Elevation (msl)	Total Depth Drilled (fbgs)	Soil Samples ^a Collected for Analysis
		Northing	Easting			
SB-019	10/21/93	1507347.212	2179625.925	1227.435	1.5	1
SB-020	10/21/93	150755.821	2179609.357	1226.202	1.5	1
Totals					3.0	2

^aNumber of soil samples collected includes field duplicates.

msl - mean sea level

fbgs - feet below ground surface

6.0 Potential Receptors

A specific potential human and ecological receptor search has not been performed for the Drainage Spillway. Data are available in the form of chemical analysis of soils and sump water; current and future uses of these media; and ecologic and demographic information necessary to initiate a potential receptors search. The following sections describe the data available to begin identification of potential receptors.

6.1 Human Receptors

Tinker AFB is situated on a relatively flat expanse of grassland. Prior to the development of the Base, the area was characterized by large tracts of agricultural land. The Base currently occupies approximately 5,000 acres of semi-improved and unimproved grounds that are used for the airfield, golf course, housing area, offices, shops, and other uses characteristic of military installations.

The Garber-Wellington aquifer, which underlies Tinker AFB, is the single most important source of potable groundwater in the Oklahoma City area. The recharge area for the Garber-Wellington aquifer covers the eastern half of Oklahoma County, including Tinker AFB. Approximately 75 percent of the Base's water supply is obtained from production wells pumping from this aquifer. Industrial operations, individual homes, farm irrigation, and small communities not served by municipal distribution systems also depend on the Garber-Wellington aquifer. Communities, such as Oklahoma City, presently depending upon surface water supplies also maintain a well system drilled into this aquifer as a standby source of water in the event of drought. Lake Stanley Draper, a local surface water supply reservoir with a small portion of its drainage basin within the boundaries of Tinker AFB, serves a significant recreational function as well.

In 1989, approximately 26,000 military and civilian personnel worked at Tinker AFB. Of these, approximately 2,722 personnel occupied on-Base housing, which consisted of 530 family housing units and seven dormitories. At that time, 1,262 of these residents were children. Military personnel and their families who reside on Base represent the nearest receptors to releases from Tinker AFB.

The current land use at and near the Base is not expected to change because the facilities have decades of useful life remaining and the Base has an important and continuing mission.

However, other future land use scenarios and any human receptors associated with those scenarios may need to be considered.

6.2 Ecological Receptors

Tinker AFB lies within a grassland ecosystem, which is typically composed of grasses, forbes, and riparian (i.e., trees, shrubs, and vines associated with water courses) vegetation. This ecosystem has generally experienced fragmentation and disturbances as result of urbanization and industrialization at and near the Base. While no threatened or endangered plant species occur on the Base, the Oklahoma penstemon (*Penstemon oklahomensis*), identified as a rare plant under the Oklahoma Natural Heritage Inventory Program, thrives in several locations on Base. Tinker AFB policy considers rare species as if they were threatened or endangered and provides the same level of protection for these species.

In general, wildlife on the Base is typically tolerant of human activities and urban environments. No federal threatened or endangered species have been reported at the Base. However, one specie found on the Base, the Texas horned lizard (*Phrynosoma cornutum*), is a Federal Category 2 candidate specie and under review for consideration to be listed as threatened or endangered. Air Force policy (AFR 126-1) considers candidate species as threatened or endangered and provides the same level of protection.

The Oklahoma Department of Wildlife Conservation also lists several species within the state as Species of Special Concern. Information on these species suggests declining populations but information is inadequate to support listing, and additional monitoring of populations is needed to determine the species status. These species also receive protection by Tinker AFB as threatened or endangered species. Of these species, the Swainson's hawk (*Buteo swainsoni*) and the burrowing owl (*Athene cunicularia*) have been sighted on Tinker AFB. The Swainson hawk, a summer visitor and prairie/meadow inhabitant, has been encountered Basewide. The burrowing owl has been known to inhabit the Air Field at the Base.

7.0 Action Levels

An "action level" is defined by EPA in proposed rule 40 CFR 264.521 (55 FR 30798; 7/27/90), "Corrective Action for Solid Waste Management Units (SWMU) at Hazardous Waste Management Facilities," as a health- and environment-based level, determined by EPA to be an indicator for protection of human health and the environment. In the preamble to this proposed rule, the focus of the RFI phase is defined as "characterizing the actual environmental problems at the facilities." As part of this characterization, a comparison of the contaminant concentrations to certain action levels should be made to determine if a significant release of hazardous constituents has occurred. This comparison is then used to determine if further action or corrective measures are required for a SWMU or an AOC. The preamble to the proposed rule states that the concept of action levels was introduced because of the need for "a trigger that will indicate the need for a Corrective Measures Study (CMS) and below which a CMS would not ordinarily be required" (55 FR 30798; 7/27/90). If constituent concentrations exceed certain action levels at a SWMU or an AOC, further action or a CMS may be warranted; if constituent concentrations are below action levels, a finding of no further action may be warranted. This chapter of the report presents the initial analytical data as compared to certain potential action levels.

Action levels are concentrations of contaminants at or below which exposure to humans or the environment should not produce acute or chronic effects.

The action level information is presented in this chapter so that a constituent concentration at a sample location can be compared with its potential action level. Only constituents identified in the analysis are listed in the AOC, Drainage Spillway table. Table 7-1 shows the action levels for soil, water, and air as published in federal or state regulations, policies, guidance documents, or proposed rules.

The action levels listed in Table 7-1 are:

- ***SWMU Corrective Action Levels (CAL)*** - The first set of action levels provided in the table are those taken from the proposed rule (40 CFR 264.521) and provided as Appendix A to the rule as "Examples of Concentrations Meeting Criteria for Action Levels." These levels are health-risk based and are provided

Table 7-1
Action Level
AOC, Drainage Spillway, Tinker AFB

Parameters	SWMU CAL ^a	USGS ^b Background	SB-019	SB-20
	Soil (mg/kg)	Soil (mg/kg)	Range (mg/kg)	Range (mg/kg)
Aluminum		89,000	7,200	9,000
Arsenic	80	21	4.4	4.6
Barium	4,000	6,400	130	76
Beryllium	0.2	3	1.1	1.1
Chromium		110	11	13
Copper		59	9.0	9.8
Iron		58,000	10,000	13,000
Lead		27	8.6	8.6
Nickel	2,000	61	17	20
Zinc		79	20	25

^aCAL - Corrective Action Levels.

^bUSGS - United States Geological Survey.

as specific examples of levels below which corrective action would not be required.

Table 7-1 also gives a brief comparative evaluation of the data collected and the related action levels. The data for each detected compound are compared with the appropriate action level in order to identify those constituents (compounds) with concentrations exceeding the action levels. This identification of the compounds above the action levels provides an indication of a potential environmental problem at a specific site. In addition, this information indicates whether there is a need for conducting a CMS so that a corrective action can be implemented/undertaken at the site.

The data included in Table 7-1 are representative of the data presented in Chapter 5.0. For each soil boring, a range was identified and used in the comparison to the action levels.

The only constituent found above an action level was that for beryllium in soil. Beryllium was detected at 1.1 mg/kg and the SWMU CAL for beryllium in soils is 0.2 mg/kg. This concentration of beryllium in soil is approximately one-third the level of beryllium found naturally occurring in regional soils, which, according to the USGS, is 3 mg/kg. Beryllium is, therefore, not a constituent of concern.

8.0 Summary and Conclusions

8.1 Summary

A Phase I RFI was conducted at the Drainage Spillway, to determine the impact, if any, of Building 1030 operations on the Drainage Spillway. During the investigation, a source characterization sample was collected from the sump located north of Building 1030 and analyzed for VOCs, SVOCs, metals, TPH, and TOC. Flow tests were conducted from the floor drains located in Building 1030, which indicated that the floor drains were connected to the sanitary sewers and not to the Drainage Spillway. No contaminants of concern were found in the sump water.

Two soil samples were collected from two shallow soil borings performed along the Drainage Spillway connecting the storm drain outfall with the spill pond. The soil samples were analyzed for VOCs, SVOCs, and metals. Based on the analytical results of the soils, there is no indication of a release or impact to the soils in the drainage area below the outfall. Although one metal exceeded the SWMU CAL for soil, it and every other metal detected were within the background ranges as reported by USGS. No constituents of concern were found in the soil.

8.2 Conclusions

Because no constituents of concern were found in the soils or the sump water and flow testing indicated that the wash water from Building 1030 drained to the sanitary sewers and not to the spill pond, Building 1030 operations have not impacted the Drainage Spillway. The surface water runoff from the Drainage Spillway is presently being sampled weekly per the NPDES Permit, Storm Water Monitoring Program.

9.0 Recommendations for Additional Work

Based on the conclusions of the RFI conducted at the Drainage Spillway, no further action is recommended for this site.

10.0 References

- Bingham R. H. and R. L. Moore, 1975, *Reconnaissance of the Water Resources of the Oklahoma City Quadrangle, Central Oklahoma*, Oklahoma Geological Survey, Hydrologic Atlas 4.
- CH2M Hill, 1986, *Hydrogeologic Investigation, Landfill 6, Tinker Air Force Base, Oklahoma*, report prepared for Gutierrez, Smouse, Wilmut, and Associates.
- CDM Federal Programs Corporation (CDM), 1992, *Final RFI Work Plan, Tinker AFB, Oklahoma*, December 1992.
- IT Corporation, 1993a, *Data Collection Quality Assurance Plan Amendment, RCRA Facility Investigation Work Plan*, prepared for Tinker AFB, Oklahoma, October 1993.
- IT Corporation, 1993b, *Final RFI Work Plan - Amendments*.
- Oklahoma Department of Wildlife Conservation, 1993.
- PRC Environmental Management, Inc. (PRC), 1989, *RCRA Facility Assessment, Tinker AFB, Oklahoma*.
- Tinker AFB, 1993, *Revised Conceptual Model for Tinker AFB, Oklahoma*, Base Geologist, November 1993.
- U.S. Army Corps of Engineers (USACE), 1993, *Landfills 1-4 Remedial Investigation Report, Tinker AFB, Oklahoma*, Draft Final Report, October 1993.
- U.S. Department of Agriculture (USDA), 1969, *Soil Survey of Oklahoma City, Oklahoma*, U.S. Department of Agriculture Soil Conservation Survey.
- U.S. Geological Survey (USGS), 1992, *Hydrologic Atlas*.
- U.S. Geological Survey (USGS), 1991, *Elemental Composition of Surficial Materials from Central Oklahoma*, Denver, Colorado
- U.S. Geological Survey (USGS), 1978.
- Wickersham, G., 1979, *Groundwater Resources of the Southern Part of the Garber-Wellington Groundwater Basin in Cleveland and Southern Oklahoma Counties and Parts of Pottawatomie County, Oklahoma*, Oklahoma Water Resources Board, Hydrologic Investigations Publication 86.
- Wood, P. R. and L. C. Burton, 1968, *Ground-Water Resources: Cleveland and Oklahoma Counties*, Oklahoma Geological Survey, Circular 71, Norman, Oklahoma, 75 p.

APPENDIX A

SOIL SAMPLE COLLECTION LOGS

DATE	10	21	93
TIME			
PAGE	2 OF 2		
PAGE			
PROJECT NO. 409832			

SAMPLE COLLECTION LOG

PROJECT NAME Tinker 5001
 SAMPLE NO. See below
 SAMPLE LOCATION Spill Pond
 SAMPLE TYPE Grab - Soil
 COMPOSITE YES X NO
 COMPOSITE TYPE NA
 DEPTH OF SAMPLE See below
 WEATHER clear, warm ~70°F

CONTAINERS USED	AMOUNT COLLECTED
125 ml	
500 ml	

COMMENTS:

1506

SB-019 Sample taken at 1650 from 6"-12"
 Soil is ^{nu 10/31/93} ~~clayey sand~~ Sandy clay, nonplastic, red 30% fine Sand, Dr
 (10R 4/8) 70% clay
 some gravel chunks

A 1507

SB-020 Sample taken at 1708 from 0"-6" interval
 Soil is Sandy clay, slightly plastic, red 30% fine Sand 70% clay
 Saturated below 6". (10R 4/8)

A 1508

Trip Blank Sampled on 10/19/93 at 1700 40 ml VOC 8240 VOC

PREPARED BY: Matthew J. Wilson

APPENDIX B

DATA TABLES, CERTIFICATES OF ANALYSIS AND CHAIN-OF-CUSTODY

ANALYTICAL RESULTS

SOURCE SAMPLES

Analytical Results at the SP
for WW
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:		WS-015 A1512 0 - 0		WS-015 A1513 0 - 0	
	Result	QFR	Units	Result	QFR	Units
Aluminum	<0.20	U	mg/l	<0.20	U	mg/l
Arsenic - Graphite Furnace	<0.010	U	mg/l	<0.010	U	mg/l
Barium	<0.20	U	mg/l	<0.20	U	mg/l
Beryllium	<0.0050	U	mg/l	<0.0050	U	mg/l
Cadmium	<0.0050	U	mg/l	<0.0050	U	mg/l
Chromium	<0.010	U	mg/l	<0.010	U	mg/l
Copper	<0.025	U	mg/l	<0.025	U	mg/l
Iron	<0.10	U	mg/l	0.11	U	mg/l
Lead - Graphite Furnace	0.012	U	mg/l	0.0077	U	mg/l
Mercury	<0.00080	U	mg/l	<0.00020	U	mg/l
Nickel	<0.040	U	mg/l	<0.040	U	mg/l
Silver	<0.010	U	mg/l	<0.010	U	mg/l
Zinc	0.027	U	mg/l	<0.020	U	mg/l
1,2,4-Trichlorobenzene	<10	U	ug/l	<10	U	ug/l
1,2-Dichlorobenzene	<10	U	ug/l	<10	U	ug/l
1,3-Dichlorobenzene	<10	U	ug/l	<10	U	ug/l
1,4-Dichlorobenzene	1.2	JB	ug/l	<10	U	ug/l
2,4,5-Trichlorophenol	<10	U	ug/l	<10	U	ug/l
2,4,6-Trichlorophenol	<10	U	ug/l	<10	U	ug/l
2,4-Dichlorophenol	<10	U	ug/l	<10	U	ug/l
2,4-Dimethylphenol	<10	U	ug/l	<10	U	ug/l
2,4-Dinitrophenol	<25	U	ug/l	<25	U	ug/l
2,4-Dinitrotoluene	<10	U	ug/l	<10	U	ug/l
2,6-Dinitrotoluene	<10	U	ug/l	<10	U	ug/l
2-Chloronaphthalene	<10	U	ug/l	<10	U	ug/l
2-Chlorophenol	<10	U	ug/l	<10	U	ug/l
2-Methylnaphthalene	<10	U	ug/l	<10	U	ug/l
2-Methylphenol	<10	U	ug/l	<10	U	ug/l
2-Nitroaniline	<25	U	ug/l	<25	U	ug/l
2-Nitrophenol	<10	U	ug/l	<10	U	ug/l
3,3'-Dichlorobenzidine	<10	U	ug/l	<10	U	ug/l

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Analytical Results at the SP
for WW
Tinker Air Force Base

Parameters	Well/Boring:		WS-015		WS-015	
	Sample ID:	Depth:	A1512	0 - 0	A1513	0 - 0
			Result	Units	Result	Units
3-Nitroaniline			<25	ug/l	<25	ug/l
4,6-Dinitro-2-methylphenol			<25	ug/l	<25	ug/l
4-Bromophenyl-phenylether			<10	ug/l	<10	ug/l
4-Chloro-3-methylphenol			<10	ug/l	<10	ug/l
4-Chloroaniline			<10	ug/l	<10	ug/l
4-Chlorophenyl-phenylether			<10	ug/l	<10	ug/l
4-Methylphenol			<10	ug/l	<10	ug/l
4-Nitroaniline			<10	ug/l	<10	ug/l
4-Nitrophenol			<25	ug/l	<25	ug/l
Acenaphthene			<10	ug/l	<10	ug/l
Acenaphthylene			<10	ug/l	<10	ug/l
Anthracene			<10	ug/l	<10	ug/l
Benzo(a)anthracene			<10	ug/l	<10	ug/l
Benzo(a)pyrene			<10	ug/l	<10	ug/l
Benzo(b)fluoranthene			<10	ug/l	<10	ug/l
Benzo(g,h,i)perylene			<10	ug/l	<10	ug/l
Benzo(k)fluoranthene			<10	ug/l	<10	ug/l
Benzoic Acid			<10	ug/l	<10	ug/l
Benzyl alcohol			<10	ug/l	<10	ug/l
Butylbenzylphthalate			<10	ug/l	<10	ug/l
Chrysene			<10	ug/l	<10	ug/l
Di-n-butylphthalate			<10	ug/l	<10	ug/l
Di-n-octylphthalate			<10	ug/l	<10	ug/l
Dibenzo(a,h)anthracene			<10	ug/l	<10	ug/l
Dibenzofuran			<10	ug/l	<10	ug/l
Diethylphthalate			<10	ug/l	<10	ug/l
Dimethylphthalate			<10	ug/l	<10	ug/l
Fluoranthene			<10	ug/l	<10	ug/l
Fluorene			<10	ug/l	<10	ug/l
Hexachlorobenzene			<10	ug/l	<10	ug/l
Hexachlorobutadiene			<10	ug/l	<10	ug/l

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
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QFR = Qualifier
Analytical data has not been validated.

Analytical Results at the SP
for WW
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:		WS-015 A1512 0 - 0		WS-015 A1513 0 - 0	
	Result	QFR	Units	Result	QFR	Units
Hexachlorocyclopentadiene	<10	U	ug/l	<10	U	ug/l
Hexachloroethane	<10	U	ug/l	<10	U	ug/l
Indeno(1,2,3-cd)pyrene	<10	U	ug/l	<10	U	ug/l
Isophorone	<10	U	ug/l	<10	U	ug/l
N-Nitroso-di-n-propylamine	<10	U	ug/l	<10	U	ug/l
N-Nitrosodiphenylamine	<10	U	ug/l	<10	U	ug/l
Naphthalene	<10	U	ug/l	<10	U	ug/l
Nitrobenzene	<10	U	ug/l	<10	U	ug/l
Pentachlorophenol	<25	U	ug/l	<25	U	ug/l
Phenanthrene	<10	U	ug/l	<10	U	ug/l
Phenol	<10	U	ug/l	<10	U	ug/l
Pyrene	<10	U	ug/l	<10	U	ug/l
bis(2-Chloroethoxy)methane	<10	U	ug/l	<10	U	ug/l
bis(2-Chloroethyl)ether	<10	U	ug/l	<10	U	ug/l
bis(2-Chloroisopropyl)ethe	<10	U	ug/l	<10	U	ug/l
bis(2-Ethylhexyl)phthalate	<10	U	ug/l	<10	U	ug/l
Total Organic Carbon	11	U	mg/l	8.5	U	mg/l
TPH - IR	<1.0	U	mg/l	<1.0	U	mg/l
1,1,1-Trichloroethane	<5	U	ug/l	<5	U	ug/l
1,1,2,2-Tetrachloroethane	<5	U	ug/l	<5	U	ug/l
1,1,2-Trichloroethane	<5	U	ug/l	<5	U	ug/l
1,1-Dichloroethane	<5	U	ug/l	<5	U	ug/l
1,1-Dichloroethene	<5	U	ug/l	<5	U	ug/l
1,2-Dichloroethane	<5	U	ug/l	<5	U	ug/l
1,2-Dichloropropane	<5	U	ug/l	<5	U	ug/l
2-Butanone	<100	U	ug/l	<100	U	ug/l
2-Chloroethylvinyl ether	<10	U	ug/l	<10	U	ug/l
2-Hexanone	<50	U	ug/l	<50	U	ug/l
4-Methyl-2-Pentanone	<50	U	ug/l	<50	U	ug/l
Acetone	<100	U	ug/l	<100	U	ug/l
Benzene	<5	U	ug/l	<5	U	ug/l

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for
that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Analytical Results at the SP
for MW
Tinker Air Force Base

Parameters	Well/Boring:		WS-015		WS-015	
	Sample ID:	Depth:	A1512	0 - 0	A1513	0 - 0
	Result	QFR	Units	Result	QFR	Units
Bromoform	<5	U	ug/l	<5	U	ug/l
Bromomethane	<10	U	ug/l	<10	U	ug/l
Carbon Disulfide	<5	U	ug/l	<5	U	ug/l
Carbon Tetrachloride	<5	U	ug/l	<5	U	ug/l
Chlorobenzene	<5	U	ug/l	<5	U	ug/l
Chlorodibromomethane	<5	U	ug/l	<5	U	ug/l
Chloroethane	<10	U	ug/l	<10	U	ug/l
Chloroform	<5	U	ug/l	<5	U	ug/l
Chloromethane	<10	U	ug/l	<10	U	ug/l
Dichlorobromomethane	<5	U	ug/l	<5	U	ug/l
Ethylbenzene	<5	U	ug/l	<5	U	ug/l
Methylene Chloride	<10	U	ug/l	<10	U	ug/l
Styrene	<5	U	ug/l	<5	U	ug/l
Tetrachloroethene	16	U	ug/l	16	U	ug/l
Toluene	<5	U	ug/l	<5	U	ug/l
Trichloroethene	11	U	ug/l	11	U	ug/l
Vinyl Acetate	<10	U	ug/l	<10	U	ug/l
Vinyl Chloride	<5	U	ug/l	<5	U	ug/l
Xylenes (total)	<5	U	ug/l	<5	U	ug/l
cis-1,3-Dichloropropene	<5	U	ug/l	<5	U	ug/l
cis-1,2-Dichloroethene	120	U	ug/l	110	U	ug/l
trans-1,3-Dichloropropene	<5	U	ug/l	<5	U	ug/l
trans-1,2-Dichloroethene	<5	U	ug/l	<5	U	ug/l

B = Analyte was also found in sample blank
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Analytical data has not been validated.

ANALYTICAL RESULTS

SOIL

Analytical Results at the SP
for SO
Tinker Air Force Base

Parameters	Well/Boring:		SB-019		SB-020	
	Sample ID:	Depth:	A1506	.5 - 1	A1507	0 - .5
	Result	Units	QFR	Result	QFR	Units
Aluminum	7200	mg/kg	N	9000	N	mg/kg
Arsenic - Graphite Furnace	4.4	mg/kg	N	4.6	N	mg/kg
Barium	130	mg/kg	N	76	N	mg/kg
Beryllium	1.1	mg/kg		1.1		mg/kg
Cadmium	<0.52	mg/kg	U	<0.58	U	mg/kg
Chromium VI	11	mg/kg		13		mg/kg
Chromium	<0.10	mg/kg	U	<0.10	U	mg/kg
Copper	9.0	mg/kg		9.8		mg/kg
Iron	10000	mg/kg	N	13000	N	mg/kg
Lead - Graphite Furnace	8.6	mg/kg	N	8.6	N	mg/kg
Mercury	<0.022	mg/kg	U	<0.022	U	mg/kg
Nickel	17	mg/kg	N	20	N	mg/kg
Silver	<1.0	mg/kg	U	<1.2	U	mg/kg
Zinc	20	mg/kg		25		mg/kg
1,2,4-Trichlorobenzene	<0.330	mg/kg	U	<0.330	U	mg/kg
1,2-Dichlorobenzene	<0.330	mg/kg	U	<0.330	U	mg/kg
1,3-Dichlorobenzene	<0.330	mg/kg	U	<0.330	U	mg/kg
1,4-Dichlorobenzene	<0.330	mg/kg	U	<0.330	U	mg/kg
2,4,5-Trichlorophenol	<0.825	mg/kg	U	<0.825	U	mg/kg
2,4,6-Trichlorophenol	<0.330	mg/kg	U	<0.330	U	mg/kg
2,4-Dichlorophenol	<0.330	mg/kg	U	<0.330	U	mg/kg
2,4-Dimethylphenol	<0.330	mg/kg	U	<0.330	U	mg/kg
2,4-Dinitrophenol	<0.825	mg/kg	U	<0.825	U	mg/kg
2,4-Dinitrotoluene	<0.330	mg/kg	U	<0.330	U	mg/kg
2,6-Dinitrotoluene	<0.330	mg/kg	U	<0.330	U	mg/kg
2-Chloronaphthalene	<0.330	mg/kg	U	<0.330	U	mg/kg
2-Chlorophenol	<0.330	mg/kg	U	<0.330	U	mg/kg
2-Methylnaphthalene	<0.330	mg/kg	U	<0.330	U	mg/kg
2-Methylphenol	<0.330	mg/kg	U	<0.330	U	mg/kg
2-Nitroaniline	<0.825	mg/kg	U	<0.825	U	mg/kg
2-Nitrophenol	<0.330	mg/kg	U	<0.330	U	mg/kg

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QFR = Qualifier
Analytical data has not been validated.

Analytical Results at the SP
for SQ
Tinker Air Force Base

Parameters	Well/Boring:		SB-019		SB-020	
	Sample ID:	Depth:	A1506	0 - .5	A1507	0 - .5
	Result	Units	QFR	Result	QFR	Units
3,3'-Dichlorobenzidine	<0.330	mg/kg	U	<0.330	U	mg/kg
3-Nitroaniline	<0.825	mg/kg	U	<0.825	U	mg/kg
4,6-Dinitro-2-methylphenol	<0.825	mg/kg	U	<0.825	U	mg/kg
4-Bromophenyl-phenylether	<0.330	mg/kg	U	<0.330	U	mg/kg
4-Chloro-3-methylphenol	<0.330	mg/kg	U	<0.330	U	mg/kg
4-Chloroaniline	<0.330	mg/kg	U	<0.330	U	mg/kg
4-Chlorophenyl-phenylether	<0.330	mg/kg	U	<0.330	U	mg/kg
4-Methylphenol	<0.330	mg/kg	U	<0.330	U	mg/kg
4-Nitroaniline	<0.825	mg/kg	U	<0.825	U	mg/kg
4-Nitrophenol	<0.330	mg/kg	U	<0.330	U	mg/kg
Acenaphthene	<0.825	mg/kg	U	<0.825	U	mg/kg
Acenaphthylene	<0.330	mg/kg	U	<0.330	U	mg/kg
Anthracene	<0.330	mg/kg	U	<0.330	U	mg/kg
Benzo(a)anthracene	<0.330	mg/kg	U	<0.330	U	mg/kg
Benzo(a)pyrene	<0.330	mg/kg	U	<0.330	U	mg/kg
Benzo(b)fluoranthene	<0.330	mg/kg	U	<0.330	U	mg/kg
Benzo(g,h,i)perylene	<0.330	mg/kg	U	<0.330	U	mg/kg
Benzo(k)fluoranthene	<0.330	mg/kg	U	<0.330	U	mg/kg
Benzoic Acid	<0.330	mg/kg	U	<0.330	U	mg/kg
Benzyl alcohol	<0.330	mg/kg	U	<0.330	U	mg/kg
Butylbenzylphthalate	<0.330	mg/kg	U	<0.330	U	mg/kg
Chrysene	<0.330	mg/kg	U	<0.330	U	mg/kg
Di-n-butylphthalate	<0.330	mg/kg	U	<0.330	U	mg/kg
Di-n-octylphthalate	0.082	mg/kg	JB	0.27	JB	mg/kg
Dibenzo(a,h)anthracene	<0.330	mg/kg	U	<0.330	U	mg/kg
Dibenzofuran	<0.330	mg/kg	U	<0.330	U	mg/kg
Diethylphthalate	<0.330	mg/kg	U	<0.330	U	mg/kg
Dimethylphthalate	<0.330	mg/kg	U	<0.330	U	mg/kg
Fluoranthene	<0.330	mg/kg	U	<0.330	U	mg/kg
Fluorene	<0.330	mg/kg	U	<0.330	U	mg/kg
Hexachlorobenzene	<0.330	mg/kg	U	<0.330	U	mg/kg

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Analytical data has not been validated.

Analytical Results at the SP
for SO
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:		SB-019 A1506 .5 - 1		SB-020 A1507 0 - .5	
	Result	Units	Result	Units	Result	Units
Hexachlorobutadiene	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
Hexachlorocyclopentadiene	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
Hexachloroethane	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
Indeno(1,2,3-cd)pyrene	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
Isophorone	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
N-Nitroso-di-n-propylamine	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
N-Nitrosodiphenylamine	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
Naphthalene	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
Nitrobenzene	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
Pentachlorophenol	<0.825	mg/kg	U	mg/kg	<0.825	mg/kg
Phenanthrene	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
Phenol	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
Pyrene	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
bis(2-Chloroethoxy)methane	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
bis(2-Chloroethyl)ether	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
bis(2-Chloroisopropyl)ethe	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
bis(2-Ethylhexyl)phthalate	<0.330	mg/kg	U	mg/kg	<0.330	mg/kg
1,1,1-Trichloroethane	<5	ug/kg	U	ug/kg	<5	ug/kg
1,1,2,2-Tetrachloroethane	<5	ug/kg	U	ug/kg	<5	ug/kg
1,1,2-Trichloroethane	<5	ug/kg	U	ug/kg	<5	ug/kg
1,1-Dichloroethane	<5	ug/kg	U	ug/kg	<5	ug/kg
1,1-Dichloroethene	<5	ug/kg	U	ug/kg	<5	ug/kg
1,2-Dichloroethane	<5	ug/kg	U	ug/kg	<5	ug/kg
1,2-Dichloropropane	<5	ug/kg	U	ug/kg	<5	ug/kg
2-Butanone	2.8	ug/kg	J8	ug/kg	4.5	ug/kg
2-Chloroethylvinyl ether	<10	ug/kg	U	ug/kg	<10	ug/kg
2-Hexanone	<50	ug/kg	U	ug/kg	<50	ug/kg
4-Methyl-2-Pentanone	<50	ug/kg	U	ug/kg	<50	ug/kg
Acetone	4.6	ug/kg	J8	ug/kg	5.0	ug/kg
Benzene	<5	ug/kg	U	ug/kg	<5	ug/kg
Bromoform	<5	ug/kg	U	ug/kg	<5	ug/kg

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Analytical Results at the SP
for SO
Tinker Air Force Base

Parameters	Well/Boring:		SB-019		SB-020	
	Sample ID:	Depth:	A1506	.5 - 1	A1507	0 - .5
	Result	Units	Result	Units	Result	Units
Bromomethane	<10	ug/kg	U	ug/kg	U	ug/kg
Carbon Disulfide	<5	ug/kg	U	ug/kg	U	ug/kg
Carbon Tetrachloride	<5	ug/kg	U	ug/kg	U	ug/kg
Chlorobenzene	<5	ug/kg	U	ug/kg	U	ug/kg
Chlorodibromomethane	<5	ug/kg	U	ug/kg	U	ug/kg
Chloroethane	<10	ug/kg	U	ug/kg	U	ug/kg
Chloroform	<5	ug/kg	U	ug/kg	U	ug/kg
Chloromethane	<10	ug/kg	U	ug/kg	U	ug/kg
Dichlorobromomethane	<5	ug/kg	U	ug/kg	U	ug/kg
Ethylbenzene	<5	ug/kg	U	ug/kg	U	ug/kg
Methylene Chloride	<10	ug/kg	U	ug/kg	1.5	ug/kg
Styrene	<5	ug/kg	U	ug/kg	JB	ug/kg
Tetrachloroethene	<5	ug/kg	U	ug/kg	U	ug/kg
Toluene	<5	ug/kg	U	ug/kg	U	ug/kg
Trichloroethene	<5	ug/kg	U	ug/kg	U	ug/kg
Vinyl Acetate	<10	ug/kg	U	ug/kg	U	ug/kg
Vinyl Chloride	<10	ug/kg	U	ug/kg	U	ug/kg
Xylenes (total)	<5	ug/kg	U	ug/kg	U	ug/kg
cis 1,3 Dichloropropene	<5	ug/kg	U	ug/kg	U	ug/kg
cis-1,2-Dichloroethene	<5	ug/kg	U	ug/kg	U	ug/kg
trans 1,3-Dichloropropene	<5	ug/kg	U	ug/kg	U	ug/kg
trans-1,2-Dichloroethene	<5	ug/kg	U	ug/kg	U	ug/kg

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ANALYTICAL RESULTS

QUALITY CONTROL

Analytical QC results at the SP
for WQ
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:	FIELDQC A1508 0 - 0			FIELDQC A1514 0 - 0			FIELDQC A1515 0 - 0		
		Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
Aluminum					<0.20	U	mg/l			
Arsenic - Graphite Furnace					<0.010	U	mg/l			
Barium					<0.20	U	mg/l			
Beryllium					<0.0050	U	mg/l			
Cadmium					<0.0050	U	mg/l			
Chromium					<0.010	U	mg/l			
Copper					<0.025	U	mg/l			
Iron					<0.10	U	mg/l			
Lead - Graphite Furnace					<0.0030	U	mg/l			
Mercury					<0.00020	U	mg/l			
Nickel					<0.040	U	mg/l			
Silver					<0.010	U	mg/l			
Zinc					<0.020	U	mg/l			
1,2,4-Trichlorobenzene					<10	U	ug/l			
1,2-Dichlorobenzene					<10	U	ug/l			
1,3-Dichlorobenzene					<10	U	ug/l			
1,4-Dichlorobenzene					<10	U	ug/l			
2,4,5-Trichlorophenol					<10	U	ug/l			
2,4,6-Tribromophenol					79	U	%rec			
2,4,6-Trichlorophenol					<10	U	ug/l			
2,4-Dichlorophenol					<10	U	ug/l			
2,4-Dimethylphenol					<10	U	ug/l			
2,4-Dinitrophenol					<25	U	ug/l			
2,4-Dinitrotoluene					<10	U	ug/l			
2,6-Dinitrotoluene					<10	U	ug/l			
2-Chloronaphthalene					<10	U	ug/l			
2-Chlorophenol					<10	U	ug/l			
2-Fluorobiphenyl					68	U	%rec			
2-Fluorophenol					51	U	%rec			
2-Methylnaphthalene					<10	U	ug/l			
2-Methylphenol					<10	U	ug/l			

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Analytical QC results at the SP
for WQ
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:	FIELDQC A1508 0 - 0			FIELDQC A1514 0 - 0			FIELDQC A1515 0 - 0		
		Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
2-Nitroaniline					<25	U	ug/l			
2-Nitrophenol					<10	U	ug/l			
3,3'-Dichlorobenzidine					<10	U	ug/l			
3-Nitroaniline					<25	U	ug/l			
4,6-Dinitro-2-methylphenol					<25	U	ug/l			
4-Bromophenyl-phenylether					<10	U	ug/l			
4-Chloro-3-methylphenol					<10	U	ug/l			
4-Chloroaniline					<10	U	ug/l			
4-Chlorophenyl-phenylether					<10	U	ug/l			
4-Methylphenol					<10	U	ug/l			
4-Nitroaniline					<10	U	ug/l			
4-Nitrophenol					<25	U	ug/l			
Acenaphthene					<10	U	ug/l			
Acenaphthylene					<10	U	ug/l			
Anthracene					<10	U	ug/l			
Benzo(a)anthracene					<10	U	ug/l			
Benzo(a)pyrene					<10	U	ug/l			
Benzo(b)fluoranthene					<10	U	ug/l			
Benzo(g,h,i)perylene					<10	U	ug/l			
Benzo(k)fluoranthene					<10	U	ug/l			
Benzoic Acid					<10	U	ug/l			
Benzo(l)alcohol					<10	U	ug/l			
Butylbenzylphthalate					<10	U	ug/l			
Chrysene					<10	U	ug/l			
Di-n-butylphthalate					<10	U	ug/l			
Di-n-octylphthalate					<10	U	ug/l			
Dibenzo(a,h)anthracene					<10	U	ug/l			
Dibenzofuran					<10	U	ug/l			
Diethylphthalate					<10	U	ug/l			
Dimethylphthalate					<10	U	ug/l			
Fluoranthene					<10	U	ug/l			

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Analytical QC results at the SP
for WQ
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:	FIELDQC A1508 0 - 0		FIELDQC A1514 0 - 0		FIELDQC A1515 0 - 0	
		Result	QFR	Units	Result	QFR	Units
Fluorene		<10		ug/l			
Hexachlorobenzene		<10		ug/l			
Hexachlorobutadiene		<10		ug/l			
Hexachlorocyclopentadiene		<10		ug/l			
Hexachloroethane		<10		ug/l			
Indeno(1,2,3-cd)pyrene		<10		ug/l			
Isophorone		<10		ug/l			
N-Nitroso-di-n-propylamine		<10		ug/l			
N-Nitrosodiphenylamine		<10		ug/l			
Naphthalene		<10		ug/l			
Nitrobenzene		<10		ug/l			
Nitrobenzene-D5		66		%rec			
Pentachlorophenol		<25		ug/l			
Phenanthrene		<10		ug/l			
Phenol		<10		ug/l			
Phenol-D5		44		%rec			
Pyrene		<10		ug/l			
Terphenyl-D14		99		%rec			
bis(2-Chloroethoxy)methane		<10		ug/l			
bis(2-Chloroethyl)ether		<10		ug/l			
bis(2-Chloroisopropyl)ethe		<10		ug/l			
bis(2-Ethylhexyl)phthalate		<10		ug/l			
Total Organic Carbon		<1.0		mg/l			
TPH - IR		<1.0		mg/l			
1,1,1-Trichloroethane		<5		ug/l			ug/l
1,1,2,2-Tetrachloroethane		<5		ug/l			ug/l
1,1,2-Trichloroethane		<5		ug/l			ug/l
1,1-Dichloroethane		<5		ug/l			ug/l
1,1-Dichloroethane		<5		ug/l			ug/l
1,2-Dichloroethane		<5		ug/l			ug/l
1,2-Dichloroethane-D4		102		%rec			%rec

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Analytical QC results at the SP
for WQ
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:			FIELDQC A1508 0 - 0			FIELDQC A1514 0 - 0			FIELDQC A1515 0 - 0		
	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
1,2-Dichloropropane	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
2-Butanone	<100	U	ug/l	<100	U	ug/l	<100	U	ug/l	<100	U	ug/l
2-Chloroethylvinyl ether	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
2-Hexanone	<50	U	ug/l	<50	U	ug/l	<50	U	ug/l	<50	U	ug/l
4-Methyl-2-Pentanone	<50	U	ug/l	<50	U	ug/l	<50	U	ug/l	<50	U	ug/l
Acetone	<100	U	ug/l	<100	U	ug/l	<100	U	ug/l	<100	U	ug/l
Benzene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Bromofluorobenzene	98	U	%rec	101	U	%rec	102	U	%rec	102	U	%rec
Bromoform	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Bromomethane	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
Carbon Disulfide	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Carbon Tetrachloride	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Chlorobenzene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Chlorodibromomethane	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Chloroethane	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
Chloroform	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Chloromethane	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
Dichlorobromomethane	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Ethylbenzene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Methylene Chloride	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
Styrene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Tetrachloroethene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Toluene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Toluene-D8	93	U	%rec	95	U	%rec	95	U	%rec	95	U	%rec
Trichloroethene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Vinyl Acetate	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
Vinyl Chloride	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
Xylenes (total)	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
cis 1,3 Dichloropropene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
cis-1,2-Dichloroethene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
trans 1,3-Dichloropropene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Analytical QC results at the SP
for HQ
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:			FIELDQC A1508 0 - 0			FIELDQC A1514 0 - 0			FIELDQC A1515 0 - 0		
	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
trans-1,2-Dichloroethene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l

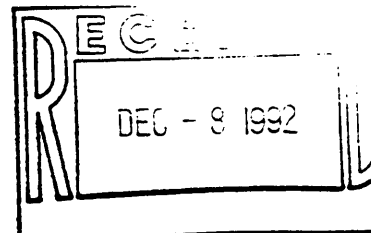
B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

CERTIFICATES OF ANALYSIS



Routed to K-2F.TL 12903

ANALYTICAL SERVICES



CERTIFICATE OF ANALYSIS

IT CORPORATION
1250 CAPITAL OF TX HWY
BLDG. 3, SUITE 200
AUSTIN, TX 78746-6443
TIM JENNINGS

Date: 12/06/93

Work Order: B3-10-300

This is the Certificate of Analysis for the following samples:

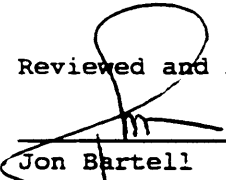
Client Work ID: D.O.5001 409832-003-01
Date Received: 10/22/93
Number of Samples: 25
Sample Type: WATER/SOIL

I. Introduction

Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
A1013	B3-10-300-01
A1014	B3-10-300-02
A1015	B3-10-300-03
A1016	B3-10-300-04
A1017	B3-10-300-05
A1018	B3-10-300-06
A1019	B3-10-300-07
A1019-MS	B3-10-300-08
A1019-MSD	B3-10-300-09
A1020	B3-10-300-10
A1021	B3-10-300-11
A1500	B3-10-300-12
A1501	B3-10-300-13

Reviewed and Approved:


Jon Bartell
Laboratory Director

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

Samples, continued from above:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
A1502	B3-10-300-14
A1503	B3-10-300-15
A1504	B3-10-300-16
A1505	B3-10-300-17
A1506	B3-10-300-18
A1507	B3-10-300-19
A1508	B3-10-300-20
LAB BLANK #1	B3-10-300-21
LAB BLANK #2	B3-10-300-22
LAB BLANK #3	B3-10-300-23
LAB BLANK	B3-10-300-24
LAB BLANK #2	B3-10-300-25

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1013
 SAMPLE DATE: 10/19/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 10/31/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	94	88 - 110
BROMOFLUOROBENZENE	95	86 - 115
1,2-DICHLOROETHANE-D4	102	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Referenced notes for these results:

Sample was run by Method 624. A nonconformance was filed.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

(512) 892-6684
409832-003-01 Work Order: B3-10-300

SAMPLE ID: A1014
SAMPLE DATE: 10/21/93 08:00:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10 MG/KG	11/02/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 WORK ORDER: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1014
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/04/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

				Reporting			Report:		
				Result	Qual	Limit	Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	!		
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	!		
Vinyl chloride	10	U	10	Trichloroethene	5	U	!		
Chloroethane	10	U	10	Chlorodibromomethane	5	U	!		
Methylene chloride	1.1	J	10	1,1,2-Trichloroethane	5	U	!		
Acetone	7.1	JB	100	Benzene	5	U	!		
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	!		
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10		
1-Dichloroethane	5	U	5	Bromoform	5	U	!		
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5	Tetrachloroethene	5	U	!		
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U			
2-Butanone	100	U	100	Toluene	5	U			
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U			
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U			
Vinyl acetate	10	U	10	Styrene	5	U			
Dichlorobromomethane	5	U	5	Xylenes, total	5	U			

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	100	74 - 121
1,2-DICHLOROETHANE-D4	111	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1014
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/02/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

	Result	Qual	Limit		Result	Qual	Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
m-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
1-(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
p-Methylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.066	JB	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1014
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	77	23 - 120
2-Fluorobiphenyl	78	30 - 115
Terphenyl-D14	85	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	68	25 - 121
2,4,6-Tribromophenol	74	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1014**
 SAMPLE DATE: **10/21/93**
 SAMPLE MATRIX: **SOIL**
 DILUTION FACTOR (6010): **113.636**
 UNITS: **MG/KG**

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.4	N	1.0	7060	11/09/93
Aluminum	8600	N*	23	6010	11/23/93
Barium	98	N*	23	6010	11/23/93
Beryllium	0.87		0.57	6010	11/23/93
Cadmium	0.57	U	0.57	6010	11/23/93
Chromium	12		1.1	6010	11/23/93
Copper	7.1		2.8	6010	11/23/93
Iron	11000	N*	11	6010	11/23/93
Nickel	12	N	4.5	6010	11/23/93
Lead	5.3	N	0.30	7421	11/09/93
Mercury	0.020	U	0.020	7471	11/06/93
Silver	1.1	U	1.1	6010	11/23/93
Zinc	19		2.3	6010	11/23/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-300

409832-003-01

SAMPLE ID: A1015
SAMPLE DATE: 10/21/93 08:20:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10	MG/KG	11/02/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1015
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporti			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	6.9	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	8.4	J	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	5	U	5	Bromoform	5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	4.6	JB	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	99	81 - 117
BROMOFLUOROBENZENE	100	74 - 121
1,2-DICHLOROETHANE-D4	103	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1015
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/02/93
 DILUTION FACTOR: 0.033

UNITS: MG/KG Reporting
 Result Qual Limit

Report
 Result Qual Limit

Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
1-Methylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.12	JB	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: ABM HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1015
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	75	23 - 120
2-Fluorobiphenyl	80	30 - 115
Terphenyl-D14	87	18 - 137
Phenol-D5	66	24 - 113
2-Fluorophenol	64	25 - 121
2,4,6-Tribromophenol	73	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1015
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 95.2380
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.97	UN	0.97	7060	11/09/93
Aluminum	9500	N*	19	6010	11/23/93
Barium	430	N*	19	6010	11/23/93
Beryllium	0.87		0.48	6010	11/23/93
Cadmium	0.48	U	0.48	6010	11/23/93
Chromium	13		0.95	6010	11/23/93
Copper	6.7		2.4	6010	11/23/93
Iron	10000	N*	9.5	6010	11/23/93
Nickel	12	N	3.8	6010	11/23/93
Lead	5.9	N	0.29	7421	11/09/93
Mercury	0.023	U	0.023	7471	11/06/93
Silver	0.95	U	0.95	6010	11/23/93
Zinc	18		1.9	6010	11/23/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01

(512) 892-6684

Work Order: B3-10-300

SAMPLE ID: A1016

SAMPLE DATE: 10/21/93 08:25:00

SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10	MG/KG	11/02/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1016
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	6.9	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	8.6	J	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
trans-1,2-Dichloroethene	5	U	5	Bromoform	5	U	5
cis-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
Chloroform	5	U	5	4-Methyl-2-pentanone	50	U	50
1,2-Dichloroethane	5	U	5	Tetrachloroethene	5	U	5
2-Butanone	3.8	JB	100	1,1,2,2-Tetrachloroethane	5	U	5
1,1,1-Trichloroethane	5	U	5	Toluene	5	U	5
Carbon tetrachloride	5	U	5	Chlorobenzene	5	U	5
Vinyl acetate	10	U	10	Ethylbenzene	5	U	5
Dichlorobromomethane	5	U	5	Styrene	5	U	5
				Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	99	74 - 121
1,2-DICHLOROETHANE-D4	107	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

(512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1016
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/08/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

			Reporting		Report		
	Result	Qual	Limit		Result	Qual	Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.088	JB	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
409832-003-01 (512) 892-6684
Work Order: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1016
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	71	23 - 120
2-Fluorobiphenyl	80	30 - 115
Terphenyl-D14	84	18 - 137
Phenol-D5	61	24 - 113
2-Fluorophenol	51	25 - 121
2,4,6-Tribromophenol	92	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1016**
 SAMPLE DATE: **10/21/93**
 SAMPLE MATRIX: **SOIL**
 DILUTION FACTOR (6010): **116.279**
 UNITS: **MG/KG**

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.97	UN	0.97	7060	11/09/93
Aluminum	6200	N*	23	6010	11/23/93
Barium	850	N*	23	6010	11/23/93
Beryllium	0.61		0.58	6010	11/23/93
Cadmium	0.58	U	0.58	6010	11/23/93
Chromium	9.8		1.2	6010	11/23/93
Copper	5.3		2.9	6010	11/23/93
Iron	9200	N*	12	6010	11/23/93
Nickel	10	N	4.7	6010	11/23/93
Lead	6.0	N	0.29	7421	11/09/93
Mercury	0.022	U	0.022	7471	11/06/93
Silver	1.2	U	1.2	6010	11/23/93
Zinc	12		2.3	6010	11/23/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1017
SAMPLE DATE: 10/21/93 14:10:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10 MG/KG	11/02/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1017
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

				Reporting			Reporting		
				Result	Qual	Limit	Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10	Trichloroethene	5	U	5		
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5		
Methylene chloride	7.0	J	10	1,1,2-Trichloroethane	5	U	5		
Acetone	6.9	J	100	Benzene	5	U	5		
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10		
-Dichloroethane	3.7	J	5	Bromoform	5	U	5		
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5	Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	13	JB	100	Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	2.3	J	5		
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10	Styrene	5	U	5		
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	104	81 - 117
BROMOFLUOROBENZENE	94	74 - 121
1,2-DICHLOROETHANE-D4	102	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: ABM HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1017
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/02/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

			Reporting	Reporti		
			Result Qual Limit	Result	Qual	Limit
Phenol	0.330	U 0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U 0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U 0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U 0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U 0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U 0.330	Diethylphthalate	0.330	U	0.330
(2-Chloroisopropyl)ether	0.330	U 0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
Methylphenol	0.330	U 0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U 0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U 0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U 0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U 0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U 0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U 0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U 0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U 0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U 0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U 0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U 0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U 0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U 0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U 0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U 0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U 0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U 0.330	Di-n-octylphthalate	0.27	JB	0.330
2,4,5-Trichlorophenol	0.825	U 0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U 0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U 0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U 0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U 0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
			Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1017
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	79	23 - 120
2-Fluorobiphenyl	81	30 - 115
Terphenyl-D14	89	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	68	25 - 121
2,4,6-Tribromophenol	81	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1017
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 116.279
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	3.8	N	1.0	7060	11/09/93
Aluminum	13000	N*	23	6010	11/23/93
Barium	83	N*	23	6010	11/23/93
Beryllium	1.1		0.58	6010	11/23/93
Cadmium	0.58	U	0.58	6010	11/23/93
Chromium	12		1.2	6010	11/23/93
Copper	7.6		2.9	6010	11/23/93
Iron	12000	N*	12	6010	11/23/93
Nickel	10	N	4.7	6010	11/23/93
Lead	9.5	N	1.2	7421	11/09/93
Mercury	0.023	U	0.023	7471	11/06/93
Silver	1.2	U	1.2	6010	11/23/93
Zinc	20		2.3	6010	11/23/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1018
SAMPLE DATE: 10/21/93 14:15:00
SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
TPH - IR		1.0U	1.0 MG/L	11/05/93	EPA418_1

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1018
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 10/31/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

Reporting				Reporti			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	9.3		5
Methylene chloride	7.7	JB	10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,2-Dichloroethane	5	U	5	Bromoform	2.6	J	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	3.2	J	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	6.6		5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	93	88 - 110
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	101	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1018**
 SAMPLE DATE: **10/21/93**
 SAMPLE MATRIX: **WATER**
 DILUTION FACTOR (6010): **1.00000**
 UNITS: **MG/L**

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.091		0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	2.1		0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0077		0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/08/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.020	U	0.020	6010	11/16/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%),
 while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1019
SAMPLE DATE: 10/21/93 14:20:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10	MG/KG	11/02/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1019
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
	Result	Qual	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	4.8	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	8.9	J	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,1-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	4.0	JB	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	99	74 - 121
1,2-DICHLOROETHANE-D4	106	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: ABM HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1019
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/02/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting			Report	
		Result	Qual Limit		Result	Qual Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U 0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U 0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U 0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U 0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U 0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U 0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U 0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U 0.330
3(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U 0.330
4-Methylphenol	0.330	U	0.330	Fluorene	0.330	U 0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U 0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U 0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U 0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U 0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U 0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U 0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U 0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U 0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U 0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U 0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U 0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U 0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U 0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U 0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U 0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U 0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.13	JB 0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U 0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U 0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U 0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U 0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U 0.330
				Benzo(g,h,i)perylene	0.330	U 0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1019
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	75	23 - 120
2-Fluorobiphenyl	79	30 - 115
Terphenyl-D14	83	18 - 137
Phenol-D5	65	24 - 113
2-Fluorophenol	63	25 - 121
2,4,6-Tribromophenol	76	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1019
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 117.647
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	7.8	N	1.2	7060	11/09/93
Aluminum	7400	N*	24	6010	11/23/93
Barium	3400	N*	24	6010	11/23/93
Beryllium	1.1		0.59	6010	11/23/93
Cadmium	0.85		0.59	6010	11/23/93
Chromium	11		1.2	6010	11/23/93
Copper	14		2.9	6010	11/23/93
Iron	16000	N*	12	6010	11/23/93
Nickel	34	N	4.7	6010	11/23/93
Lead	18	N	1.4	7421	11/09/93
Mercury	0.024	U	0.024	7471	11/06/93
Silver	1.2	U	1.2	6010	11/23/93
Zinc	17		2.4	6010	11/23/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Duplicate analysis outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES, affecting all soil samples in batch. LCS / LCSD results and method Quality Control were acceptable.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1019-MS
SAMPLE DATE: 10/21/93 14:20:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		88		% REC	11/02/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 WORK ORDER: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1019-MS
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: % REC

	Result		Result
1,1-Dichloroethene	95	Trichloroethene	81
		Benzene	98
		Toluene	99
		Chlorobenzene	101

Surrogates	% Recovery	Limits
TOLUENE-D8	100	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1019-MS
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/02/93
 DILUTION FACTOR: 0.033
 UNITS: % REC

	Result		Result
Phenol	70	Acenaphthene	96
2-Chlorophenol	80	4-Nitrophenol	85
1,4-Dichlorobenzene	68	2,4-Dinitrotoluene	80
N-Nitroso-di-n-propylamine	86	Pentachlorophenol	79
1,2,4-Trichlorobenzene	82	Pyrene	92
4-Chloro-3-methylphenol	85		

Surrogates	% Recovery	Limits
Nitrobenzene-D5	77	23 - 120
2-Fluorobiphenyl	79	30 - 115
Terphenyl-D14	82	18 - 137
Phenol-D5	67	24 - 113
2-Fluorophenol	70	25 - 121
2,4,6-Tribromophenol	81	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1019-MS
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 88.4955
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	139			7060	11/09/93
Aluminum	973		18	6010	11/23/93
Barium	0		18	6010	11/23/93
Beryllium	85		0.44	6010	11/23/93
Cadmium	84		0.44	6010	11/23/93
Chromium	90		0.88	6010	11/23/93
Copper	82		2.2	6010	11/23/93
Iron	0		8.8	6010	11/23/93
Nickel	74		3.5	6010	11/23/93
Lead	0			7421	11/09/93
Mercury	104			7471	11/06/93
Silver	85		0.88	6010	11/23/93
Zinc	86		1.8	6010	11/23/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike outside control limits due to matrix interference on aluminum, barium, iron and nickel analysis by ICPEs, affecting all soil samples in batch. LCS / LCSD and method Quality Control were acceptable.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1019-MSD
SAMPLE DATE: 10/21/93 14:20:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		94		% REC	11/02/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1019-MSD
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: % REC

	Result		Result
1,1-Dichloroethene	93	Trichloroethene	82
		Benzene	99
		Toluene	100
		Chlorobenzene	103

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	99	74 - 121
1,2-DICHLOROETHANE-D4	103	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: ABM HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1019-MSD
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/02/93
 DILUTION FACTOR: 0.033
 UNITS: % REC

	Result		Result
Phenol	74	Acenaphthene	95
2-Chlorophenol	84	4-Nitrophenol	77
1,4-Dichlorobenzene	72	2,4-Dinitrotoluene	79
N-Nitroso-di-n-propylamine	85	Pentachlorophenol	73
1,2,4-Trichlorobenzene	83	Pyrene	96
4-Chloro-3-methylphenol	86		

Surrogates	% Recovery	Limits
Nitrobenzene-D5	73	23 - 120
2-Fluorobiphenyl	76	30 - 115
Terphenyl-D14	82	18 - 137
Phenol-D5	68	24 - 113
2-Fluorophenol	70	25 - 121
2,4,6-Tribromophenol	75	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1019-MSD
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 104.166
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	141			7060	11/09/93
Aluminum	808		21	6010	11/23/93
Barium	0		21	6010	11/23/93
Beryllium	85		0.52	6010	11/23/93
Cadmium	83		0.52	6010	11/23/93
Chromium	90		1.0	6010	11/23/93
Copper	82		2.6	6010	11/23/93
Iron	0		10	6010	11/23/93
Nickel	74		4.2	6010	11/23/93
Lead	0			7421	11/09/93
Mercury	107			7471	11/06/93
Silver	85		1.0	6010	11/23/93
Zinc	85		2.1	6010	11/23/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike duplicate outside control limits due to matrix interference on aluminum, barium, iron and nickel analysis by ICPEs, affecting all soil samples in batch. LCS / LCSD and method Quality Control were acceptable.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1020
SAMPLE DATE: 10/21/93 14:30:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10 MG/KG	11/03/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 409832-003-01 (512) 892-6684
 WORK ORDER: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1020
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

				Reporting			Reporting		
				Result	Qual	Limit	Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	!		
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	!		
Vinyl chloride	10	U	10	Trichloroethene	5	U	!		
Chloroethane	10	U	10	Chlorodibromomethane	5	U	!		
Methylene chloride	3.7	J	10	1,1,2-Trichloroethane	5	U	!		
Acetone	6.1	J	100	Benzene	5	U	!		
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	!		
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10		
1-Dichloroethane	3.4	J	5	Bromoform	5	U	!		
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5	Tetrachloroethene	5	U	!		
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	!		
2-Butanone	100	U	100	Toluene	5	U	!		
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	!		
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	!		
Vinyl acetate	10	U	10	Styrene	5	U	!		
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	!		

Surrogates	% Recovery	Limits
TOLUENE-D8	100	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	104	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1020
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/02/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting	Result	Qual	Limit
Phenol	0.330	U	0.330		
bis(2-Chloroethyl)ether	0.330	U	0.330		
2-Chlorophenol	0.330	U	0.330		
1,3-Dichlorobenzene	0.330	U	0.330		
1,4-Dichlorobenzene	0.330	U	0.330		
Benzyl alcohol	0.330	U	0.330		
1,2-Dichlorobenzene	0.330	U	0.330		
2-Methylphenol	0.330	U	0.330		
(2-Chloroisopropyl)ether	0.330	U	0.330		
Methylphenol	0.330	U	0.330		
N-Nitroso-di-n-propylamine	0.330	U	0.330		
Hexachloroethane	0.330	U	0.330		
Nitrobenzene	0.330	U	0.330		
Isophorone	0.330	U	0.330		
2-Nitrophenol	0.330	U	0.330		
2,4-Dimethylphenol	0.330	U	0.330		
Benzoic Acid	0.330	U	0.330		
bis(2-Chloroethoxy)methane	0.330	U	0.330		
2,4-Dichlorophenol	0.330	U	0.330		
1,2,4-Trichlorobenzene	0.330	U	0.330		
Naphthalene	0.330	U	0.330		
4-Chloroaniline	0.330	U	0.330		
Hexachlorobutadiene	0.330	U	0.330		
4-Chloro-3-methylphenol	0.330	U	0.330		
2-Methylnaphthalene	0.330	U	0.330		
Hexachlorocyclopentadiene	0.330	U	0.330		
2,4,6-Trichlorophenol	0.330	U	0.330		
2,4,5-Trichlorophenol	0.825	U	0.825		
2-Chloronaphthalene	0.330	U	0.330		
2-Nitroaniline	0.825	U	0.825		
Dimethylphthalate	0.330	U	0.330		
Acenaphthylene	0.330	U	0.330		
2,6-Dinitrotoluene	0.330	U	0.330		
3-Nitroaniline	0.825	U	0.825		
Acenaphthene	0.330	U	0.330		
2,4-Dinitrophenol	0.825	U	0.825		
4-Nitrophenol	0.825	U	0.825		
Dibenzofuran	0.330	U	0.330		
2,4-Dinitrotoluene	0.330	U	0.330		
Diethylphthalate	0.330	U	0.330		
4-Chlorophenyl-phenylether	0.330	U	0.330		
Fluorene	0.330	U	0.330		
4-Nitroaniline	0.825	U	0.825		
4,6-Dinitro-2-methylphenol	0.825	U	0.825		
N-Nitrosodiphenylamine (1)	0.330	U	0.330		
4-Bromophenyl-phenylether	0.330	U	0.330		
Hexachlorobenzene	0.330	U	0.330		
Pentachlorophenol	0.825	U	0.825		
Phenanthrene	0.330	U	0.330		
Anthracene	0.330	U	0.330		
Di-n-butylphthalate	0.330	U	0.330		
Fluoranthene	0.330	U	0.330		
Pyrene	0.330	U	0.330		
Butylbenzylphthalate	0.330	U	0.330		
3,3'-Dichlorobenzidine	0.330	U	0.330		
Benzo(a)anthracene	0.330	U	0.330		
Chrysene	0.330	U	0.330		
bis(2-Ethylhexyl)phthalate	0.330	U	0.330		
Di-n-octylphthalate	0.20	JB	0.330		
Benzo(b)fluoranthene	0.330	U	0.330		
Benzo(k)fluoranthene	0.330	U	0.330		
Benzo(a)pyrene	0.330	U	0.330		
Indeno(1,2,3-cd)pyrene	0.330	U	0.330		
Dibenzo(a,h)anthracene	0.330	U	0.330		
Benzo(g,h,i)perylene	0.330	U	0.330		

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1020
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	78	23 - 120
2-Fluorobiphenyl	82	30 - 115
Terphenyl-D14	83	18 - 137
Phenol-D5	70	24 - 113
2-Fluorophenol	71	25 - 121
2,4,6-Tribromophenol	78	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: Metals
METHOD REFERENCE: EPA6010

SAMPLE ID: A1020
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL
DILUTION FACTOR (6010): 87.7192
UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.0	N	1.1	7060	11/09/93
Aluminum	5200	N*	18	6010	11/23/93
Barium	80	N*	18	6010	11/23/93
Beryllium	0.58		0.44	6010	11/23/93
Cadmium	0.44	U	0.44	6010	11/23/93
Chromium	6.5		0.88	6010	11/23/93
Copper	4.7		2.2	6010	11/23/93
Iron	4700	N*	8.8	6010	11/23/93
Nickel	9.4	N	3.5	6010	11/23/93
Lead	5.8	N	0.32	7421	11/09/93
Mercury	0.021	U	0.021	7471	11/06/93
Silver	0.88	U	0.88	6010	11/23/93
Zinc	13		1.8	6010	11/23/93

Data qualifier key:

E - estimated value
M - duplicate injection precision not met
N - spike recovery not within control limits
S - determined by MSA
W - post-digestion spike for Furnace AA is out of control limits (85-115%),
while sample absorbance is <50% of spike absorbance
* - duplicate analysis outside control limits
+ - Correlation coefficient for the MSA <0.995
B - < CRDL but >= IDL
U - none detected
'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1021
SAMPLE DATE: 10/21/93 14:35:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10	MG/KG	11/03/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1021
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reportin			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	3.0	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	7.2	J	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	3.4	J	5	Bromoform	5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	4.2	JB	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	98	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	103	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1021
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/02/93
 DILUTION FACTOR: 0.033

UNITS: MG/KG		Reporting		Reporting	
	Result	Qual	Limit	Result	Qual Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330 U 0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825 U 0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330 U 0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825 U 0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825 U 0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330 U 0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330 U 0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330 U 0.330
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330 U 0.330
2-Methylphenol	0.330	U	0.330	Fluorene	0.330 U 0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825 U 0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825 U 0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330 U 0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330 U 0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330 U 0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825 U 0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330 U 0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330 U 0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330 U 0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330 U 0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330 U 0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330 U 0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330 U 0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330 U 0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330 U 0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330 U 0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330 U 0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330 U 0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330 U 0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330 U 0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330 U 0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330 U 0.330
				Benzo(g,h,i)perylene	0.330 U 0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
409832-003-01 (512) 892-6684
Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1021
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	76	23 - 120
2-Fluorobiphenyl	76	30 - 115
Terphenyl-D14	80	18 - 137
Phenol-D5	70	24 - 113
2-Fluorophenol	71	25 - 121
2,4,6-Tribromophenol	76	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1021
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 90.0900
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.0	UN	1.0	7060	11/09/93
Aluminum	6700	N*	18	6010	11/23/93
Barium	630	N*	18	6010	11/23/93
Beryllium	0.72		0.45	6010	11/23/93
Cadmium	0.45	U	0.45	6010	11/23/93
Chromium	10		0.90	6010	11/23/93
Copper	6.2		2.3	6010	11/23/93
Iron	10000	N*	9.0	6010	11/23/93
Nickel	11	N	3.6	6010	11/23/93
Lead	5.4	N	0.31	7421	11/09/93
Mercury	0.022	U	0.022	7471	11/06/93
Silver	0.90	U	0.90	6010	11/23/93
Zinc	14		1.8	6010	11/23/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1500
SAMPLE DATE: 10/21/93 11:18:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10	MG/KG	11/02/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1500
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	3.1	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	7.3	J	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	5	U	5	Bromoform	5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	3.4	JB	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	99	81 - 117
BROMOFLUOROBENZENE	99	74 - 121
1,2-DICHLOROETHANE-D4	109	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: ABM HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1500
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/08/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting	Result	Qual	Limit	Reporting	Result	Qual	Limit
Phenol	0.330	U	0.330			2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330			3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330			Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330			2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330			4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330			Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330			2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330			Diethylphthalate	0.330	U	0.330
(2-Chloroisopropyl)ether	0.330	U	0.330			4-Chlorophenyl-phenylether	0.330	U	0.330
Methylphenol	0.330	U	0.330			Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330			4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330			4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330			N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330			4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330			Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330			Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330			Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330			Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330			Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330			Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330			Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330			Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330			3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330			Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330			Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330			bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330			Di-n-octylphthalate	0.26	JB	0.330
2,4,5-Trichlorophenol	0.825	U	0.825			Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330			Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825			Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330			Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330			Dibenzo(a,h)anthracene	0.330	U	0.330
						Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1500
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	79	23 - 120
2-Fluorobiphenyl	88	30 - 115
Terphenyl-D14	89	18 - 137
Phenol-D5	65	24 - 113
2-Fluorophenol	56	25 - 121
2,4,6-Tribromophenol	95	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1500
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 568.181
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	5.4	UN	5.4	7060	11/10/93
Aluminum	15000	N*	110	6010	11/23/93
Barium	1100	N*	110	6010	11/23/93
Beryllium	2.8	U	2.8	6010	11/23/93
Cadmium	2.8	U	2.8	6010	11/23/93
Chromium	13		5.7	6010	11/23/93
Copper	14	U	14	6010	11/23/93
Iron	13000	N*	57	6010	11/23/93
Nickel	23	N	23	6010	11/23/93
Lead	4.0	N	0.33	7421	11/09/93
Mercury	0.021	U	0.021	7471	11/06/93
Silver	5.7	U	5.7	6010	11/23/93
Zinc	30		11	6010	11/23/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%),
 while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

(512) 892-6684
409832-003-01 Work Order: B3-10-300

SAMPLE ID: A1501
SAMPLE DATE: 10/21/93 12:57:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10 MG/KG	11/02/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1501
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	1.7	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	6.1	J	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
trans-1,2-Dichloroethene	5	U	5	Bromoform	5	U	5
cis-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
Chloroform	5	U	5	4-Methyl-2-pentanone	50	U	50
1,2-Dichloroethane	5	U	5	Tetrachloroethene	5	U	5
2-Butanone	4.2	JB	100	1,1,2,2-Tetrachloroethane	5	U	5
1,1,1-Trichloroethane	5	U	5	Toluene	5	U	5
Carbon tetrachloride	5	U	5	Chlorobenzene	5	U	5
Vinyl acetate	10	U	10	Ethylbenzene	5	U	5
Dichlorobromomethane	5	U	5	Styrene	5	U	5
				Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	105	81 - 117
BROMOFLUOROBENZENE	94	74 - 121
1,2-DICHLOROETHANE-D4	105	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: AEM HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1501
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/08/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting Result Qual Limit	Result Qual Limit
Phenol	0.330	U 0.330	0.330 U 0.330
bis(2-Chloroethyl)ether	0.330	U 0.330	0.825 U 0.825
2-Chlorophenol	0.330	U 0.330	0.330 U 0.330
1,3-Dichlorobenzene	0.330	U 0.330	0.825 U 0.825
1,4-Dichlorobenzene	0.330	U 0.330	0.825 U 0.825
Benzyl alcohol	0.330	U 0.330	0.330 U 0.330
1,2-Dichlorobenzene	0.330	U 0.330	0.330 U 0.330
2-Methylphenol	0.330	U 0.330	0.330 U 0.330
1-(2-Chloroisopropyl)ether	0.330	U 0.330	0.330 U 0.330
Methylphenol	0.330	U 0.330	0.330 U 0.330
N-Nitroso-di-n-propylamine	0.330	U 0.330	0.825 U 0.825
Hexachloroethane	0.330	U 0.330	0.825 U 0.825
Nitrobenzene	0.330	U 0.330	0.330 U 0.330
Isophorone	0.330	U 0.330	0.330 U 0.330
2-Nitrophenol	0.330	U 0.330	0.330 U 0.330
2,4-Dimethylphenol	0.330	U 0.330	0.825 U 0.825
Benzoic Acid	0.330	U 0.330	0.330 U 0.330
bis(2-Chloroethoxy)methane	0.330	U 0.330	0.330 U 0.330
2,4-Dichlorophenol	0.330	U 0.330	0.330 U 0.330
1,2,4-Trichlorobenzene	0.330	U 0.330	0.330 U 0.330
Naphthalene	0.330	U 0.330	0.330 U 0.330
4-Chloroaniline	0.330	U 0.330	0.330 U 0.330
Hexachlorobutadiene	0.330	U 0.330	0.330 U 0.330
4-Chloro-3-methylphenol	0.330	U 0.330	0.330 U 0.330
2-Methylnaphthalene	0.330	U 0.330	0.330 U 0.330
Hexachlorocyclopentadiene	0.330	U 0.330	0.330 U 0.330
2,4,6-Trichlorophenol	0.330	U 0.330	0.084 JB 0.330
2,4,5-Trichlorophenol	0.825	U 0.825	0.330 U 0.330
2-Chloronaphthalene	0.330	U 0.330	0.330 U 0.330
2-Nitroaniline	0.825	U 0.825	0.330 U 0.330
Dimethylphthalate	0.330	U 0.330	0.330 U 0.330
Acenaphthylene	0.330	U 0.330	0.330 U 0.330
2,6-Dinitrotoluene	0.330	U 0.330	0.330 U 0.330
3-Nitroaniline	0.825	U 0.825	0.330 U 0.330
Acenaphthene	0.330	U 0.330	0.330 U 0.330
2,4-Dinitrophenol	0.825	U 0.825	0.330 U 0.330
4-Nitrophenol	0.825	U 0.825	0.330 U 0.330
Dibenzofuran	0.330	U 0.330	0.330 U 0.330
2,4-Dinitrotoluene	0.330	U 0.330	0.330 U 0.330
Diethylphthalate	0.330	U 0.330	0.330 U 0.330
4-Chlorophenyl-phenylether	0.330	U 0.330	0.330 U 0.330
Fluorene	0.330	U 0.330	0.330 U 0.330
4-Nitroaniline	0.825	U 0.825	0.330 U 0.330
4,6-Dinitro-2-methylphenol	0.825	U 0.825	0.330 U 0.330
N-Nitrosodiphenylamine (1)	0.330	U 0.330	0.330 U 0.330
4-Bromophenyl-phenylether	0.330	U 0.330	0.330 U 0.330
Hexachlorobenzene	0.330	U 0.330	0.330 U 0.330
Pentachlorophenol	0.825	U 0.825	0.330 U 0.330
Phenanthrene	0.330	U 0.330	0.330 U 0.330
Anthracene	0.330	U 0.330	0.330 U 0.330
Di-n-butylphthalate	0.330	U 0.330	0.330 U 0.330
Fluoranthene	0.330	U 0.330	0.330 U 0.330
Pyrene	0.330	U 0.330	0.330 U 0.330
Butylbenzylphthalate	0.330	U 0.330	0.330 U 0.330
3,3'-Dichlorobenzidine	0.330	U 0.330	0.330 U 0.330
Benzo(a)anthracene	0.330	U 0.330	0.330 U 0.330
Chrysene	0.330	U 0.330	0.330 U 0.330
bis(2-Ethylhexyl)phthalate	0.330	U 0.330	0.330 U 0.330
Di-n-octylphthalate	0.084	JB 0.330	0.330 U 0.330
Benzo(b)fluoranthene	0.330	U 0.330	0.330 U 0.330
Benzo(k)fluoranthene	0.330	U 0.330	0.330 U 0.330
Benzo(a)pyrene	0.330	U 0.330	0.330 U 0.330
Indeno(1,2,3-cd)pyrene	0.330	U 0.330	0.330 U 0.330
Dibenzo(a,h)anthracene	0.330	U 0.330	0.330 U 0.330
Benzo(g,h,i)perylene	0.330	U 0.330	0.330 U 0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1501
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	77	23 - 120
2-Fluorobiphenyl	88	30 - 115
Terphenyl-D14	92	18 - 137
Phenol-D5	64	24 - 113
2-Fluorophenol	55	25 - 121
2,4,6-Tribromophenol	100	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1501
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 104.166
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.9	N	0.93	7060	11/09/93
Aluminum	9900	N*	21	6010	11/23/93
Barium	550	N*	21	6010	11/23/93
Beryllium	1.1		0.52	6010	11/23/93
Cadmium	0.52	U	0.52	6010	11/23/93
Chromium	11		1.0	6010	11/23/93
Copper	5.9		2.6	6010	11/23/93
Iron	11000	N*	10	6010	11/23/93
Nickel	7.3	N	4.2	6010	11/23/93
Lead	8.5	N	1.1	7421	11/09/93
Mercury	0.024	U	0.024	7471	11/06/93
Silver	1.0	U	1.0	6010	11/23/93
Zinc	13		2.1	6010	11/23/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1502
SAMPLE DATE: 10/21/93 14:44:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10 MG/KG	11/03/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1502
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

	Reporting				Reporting		
	Result	Qual	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	35	J	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	5	U	5	Bromoform	5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	7.0	JB	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	105	81 - 117
BROMOFLUOROBENZENE	94	74 - 121
1,2-DICHLOROETHANE-D4	106	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1502
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/08/93
 DILUTION FACTOR: 0.033

UNITS: MG/KG Reporting

Result Qual Limit Report

	Result	Qual	Limit		Result	Qual	Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
Methylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.05	J	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.18	JB	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 WORK ORDER: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1502
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	71	23 - 120
2-Fluorobiphenyl	82	30 - 115
Terphenyl-D14	90	18 - 137
Phenol-D5	62	24 - 113
2-Fluorophenol	52	25 - 121
2,4,6-Tribromophenol	108	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1502
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 90.9090
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	3.1	N	1.1	7060	11/09/93
Aluminum	10000	N*	18	6010	11/23/93
Barium	330	N*	18	6010	11/23/93
Beryllium	0.91		0.45	6010	11/23/93
Cadmium	0.45	U	0.45	6010	11/23/93
Chromium	12		0.91	6010	11/23/93
Copper	5.7		2.3	6010	11/23/93
Iron	11000	N*	9.1	6010	11/23/93
Nickel	8.9	N	3.6	6010	11/23/93
Lead	8.4	N	0.32	7421	11/09/93
Mercury	0.021	U	0.021	7471	11/06/93
Silver	0.91	U	0.91	6010	11/23/93
Zinc	21		1.8	6010	11/23/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1503
SAMPLE DATE: 10/21/93 14:44:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10 MG/KG	11/03/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1503
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	0.8	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	28	J	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	5	U	5	Bromoform	5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	3.3	JB	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	106	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1503
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/08/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

			Reporting					Reporti	
	Result	Qual	Limit			Result	Qual	Limit	
Phenol	0.330	U	0.330	2,6-Dinitrotoluene		0.330	U	0.330	
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline		0.825	U	0.825	
2-Chlorophenol	0.330	U	0.330	Acenaphthene		0.330	U	0.330	
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol		0.825	U	0.825	
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol		0.825	U	0.825	
Benzyl alcohol	0.330	U	0.330	Dibenzofuran		0.330	U	0.330	
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene		0.330	U	0.330	
2-Methylphenol	0.330	U	0.330	Diethylphthalate		0.330	U	0.330	
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether		0.330	U	0.330	
Methylphenol	0.330	U	0.330	Fluorene		0.330	U	0.330	
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline		0.825	U	0.825	
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol		0.825	U	0.825	
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)		0.330	U	0.330	
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether		0.330	U	0.330	
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene		0.330	U	0.330	
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol		0.825	U	0.825	
Benzoic Acid	0.330	U	0.330	Phenanthrene		0.330	U	0.330	
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene		0.330	U	0.330	
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate		0.330	U	0.330	
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene		0.330	U	0.330	
Naphthalene	0.330	U	0.330	Pyrene		0.330	U	0.330	
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate		0.330	U	0.330	
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine		0.330	U	0.330	
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene		0.330	U	0.330	
2-Methylnaphthalene	0.330	U	0.330	Chrysene		0.330	U	0.330	
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate		0.330	U	0.330	
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate		0.21	JB	0.330	
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene		0.330	U	0.330	
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene		0.330	U	0.330	
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene		0.330	U	0.330	
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene		0.330	U	0.330	
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene		0.330	U	0.330	
				Benzo(g,h,i)perylene		0.330	U	0.330	

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1503
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	68	23 - 120
2-Fluorobiphenyl	82	30 - 115
Terphenyl-D14	85	18 - 137
Phenol-D5	60	24 - 113
2-Fluorophenol	51	25 - 121
2,4,6-Tribromophenol	99	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1503
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 111.111
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.6	N	1.2	7060	11/09/93
Aluminum	13000	N*	22	6010	11/23/93
Barium	470	N*	22	6010	11/23/93
Beryllium	1.1		0.56	6010	11/23/93
Cadmium	0.56	U	0.56	6010	11/23/93
Chromium	14		1.1	6010	11/23/93
Copper	16		2.8	6010	11/23/93
Iron	13000	N*	11	6010	11/23/93
Nickel	11	N	4.4	6010	11/23/93
Lead	6.6	N	0.35	7421	11/09/93
Mercury	0.024	U	0.024	7471	11/06/93
Silver	1.1	U	1.1	6010	11/23/93
Zinc	20		2.2	6010	11/23/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%),
 while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1504
SAMPLE DATE: 10/21/93 15:05:00
SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.010	MG/L	10/22/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1504

SAMPLE DATE: 10/21/93

SAMPLE MATRIX: WATER

ANALYSIS DATE: 10/31/93

DILUTION FACTOR: 1.0

UNITS: UG/L

				Reporting			Reporti		
				Result	Qual	Limit	Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10	Trichloroethene	5	U	5		
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5		
Methylene chloride	7.0	JB	10	1,1,2-Trichloroethane	5	U	5		
Acetone	100	U	100	Benzene	5	U	5		
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10		
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5		
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5	Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	100	U	100	Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5		
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10	Styrene	5	U	5		
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	91	88 - 110
BROMOFLUOROBENZENE	94	86 - 115
1,2-DICHLOROETHANE-D4	100	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1504
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: WATER
 EXTRACTION DATE: 10/27/93
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0

	UNITS:	UG/L	Reporting				UNITS:	UG/L	Reporting		
			Result	Qual	Limit				Result	Qual	Limit
Phenol			10	U	10	2,6-Dinitrotoluene		10	U	10	
bis(2-Chloroethyl)ether			10	U	10	3-Nitroaniline		25	U	25	
2-Chlorophenol			10	U	10	Acenaphthene		10	U	10	
1,3-Dichlorobenzene			10	U	10	2,4-Dinitrophenol		25	U	25	
1,4-Dichlorobenzene			10	U	10	4-Nitrophenol		25	U	25	
Benzyl alcohol			10	U	10	Dibenzofuran		10	U	10	
1,2-Dichlorobenzene			10	U	10	2,4-Dinitrotoluene		10	U	10	
2-Methylphenol			10	U	10	Diethylphthalate		10	U	10	
(2-Chloroisopropyl)ether			10	U	10	4-Chlorophenyl-phenylether		10	U	10	
Methylphenol			10	U	10	Fluorene		10	U	10	
N-Nitroso-di-n-propylamine			10	U	10	4-Nitroaniline		10	U	10	
Hexachloroethane			10	U	10	4,6-Dinitro-2-methylphenol		25	U	25	
Nitrobenzene			10	U	10	N-Nitrosodiphenylamine (1)		10	U	10	
Isophorone			10	U	10	4-Bromophenyl-phenylether		10	U	10	
2-Nitrophenol			10	U	10	Hexachlorobenzene		10	U	10	
2,4-Dimethylphenol			10	U	10	Pentachlorophenol		25	U	25	
Benzoic Acid			10	U	10	Phenanthrene		10	U	10	
bis(2-Chloroethoxy)methane			10	U	10	Anthracene		10	U	10	
2,4-Dichlorophenol			10	U	10	Di-n-butylphthalate		10	U	10	
1,2,4-Trichlorobenzene			10	U	10	Fluoranthene		10	U	10	
Naphthalene			10	U	10	Pyrene		10	U	10	
4-Chloroaniline			10	U	10	Butylbenzylphthalate		10	U	10	
Hexachlorobutadiene			10	U	10	3,3'-Dichlorobenzidine		10	U	10	
4-Chloro-3-methylphenol			10	U	10	Benzo(a)anthracene		10	U	10	
2-Methylnaphthalene			10	U	10	Chrysene		10	U	10	
Hexachlorocyclopentadiene			10	U	10	bis(2-Ethylhexyl)phthalate		10	U	10	
2,4,6-Trichlorophenol			10	U	10	Di-n-octylphthalate		10	U	10	
2,4,5-Trichlorophenol			10	U	10	Benzo(b)fluoranthene		10	U	10	
2-Chloronaphthalene			10	U	10	Benzo(k)fluoranthene		10	U	10	
2-Nitroaniline			25	U	25	Benzo(a)pyrene		10	U	10	
Dimethylphthalate			10	U	10	Indeno(1,2,3-cd)pyrene		10	U	10	
Acenaphthylene			10	U	10	Dibenzo(a,h)anthracene		10	U	10	
						Benzo(g,h,i)perylene		10	U	10	

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1504
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	68	35 - 114
2-Fluorobiphenyl	71	43 - 116
Terphenyl-D14	84	33 - 141
Phenol-D5	40	10 - 94
2-Fluorophenol	60	21 - 100
2,4,6-Tribromophenol	78	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: Metals
METHOD REFERENCE: EPA6010

SAMPLE ID: A1504
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: WATER
DILUTION FACTOR (6010): 1.00000
UNITS: mg/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.10	U	0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0030	U	0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/08/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.020	U	0.020	6010	11/16/93

Data qualifier key:

E - estimated value
M - duplicate injection precision not met
N - spike recovery not within control limits
S - determined by MSA
W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
* - duplicate analysis outside control limits
+ - Correlation coefficient for the MSA <0.995
B - < CRDL but >= IDL
U - none detected
'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1505
SAMPLE DATE: 10/21/93 16:00:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10 MG/KG	11/03/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1505
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporti			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	3.2	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	2.7	JB	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	93	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1505
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/08/93
 DILUTION FACTOR: 0.033

	MG/KG	Reporting				Report	
		Result	Qual Limit			Result	Qual Limi
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
1(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
Methylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.13	JB	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: E3-10-300

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1505
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	66	23 - 120
2-Fluorobiphenyl	81	30 - 115
Terphenyl-D14	82	18 - 137
Phenol-D5	60	24 - 113
2-Fluorophenol	50	25 - 121
2,4,6-Tribromophenol	96	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1505
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 100.000
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.8	N	1.0	7060	11/09/93
Aluminum	8300	N*	20	6010	11/23/93
Barium	370	N*	20	6010	11/23/93
Beryllium	0.87		0.50	6010	11/23/93
Cadmium	0.50	U	0.50	6010	11/23/93
Chromium	11		1.0	6010	11/23/93
Copper	5.5		2.5	6010	11/23/93
Iron	9500	N*	10	6010	11/23/93
Nickel	9.1	N	4.0	6010	11/23/93
Lead	6.4	N	0.31	7421	11/09/93
Mercury	0.023	U	0.023	7471	11/06/93
Silver	1.0	U	1.0	6010	11/23/93
Zinc	18		2.0	6010	11/23/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01

(512) 892-6684
Work Order: B3-10-300

SAMPLE ID: A1506
SAMPLE DATE: 10/21/93 16:50:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10	MG/KG	11/03/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1506
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/04/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	4.6	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	5	U	5	Bromoform	5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	2.8	JB	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	104	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 WORK ORDER: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1506
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 0.033

UNITS: MG/KG Reporting
 Result Qual Limit

Reporting
 Result Qual Limit

Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
3(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
Methylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.082	JB	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1506
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	58	23 - 120
2-Fluorobiphenyl	68	30 - 115
Terphenyl-D14	69	18 - 137
Phenol-D5	52	24 - 113
2-Fluorophenol	65	25 - 121
2,4,6-Tribromophenol	56	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1506**
 SAMPLE DATE: **10/21/93**
 SAMPLE MATRIX: **SOIL**
 DILUTION FACTOR (6010): **104.166**
 UNITS: **MG/KG**

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	4.4	N	0.93	7060	11/09/93
Aluminum	7200	N*	21	6010	11/23/93
Barium	130	N*	21	6010	11/23/93
Beryllium	1.1		0.52	6010	11/23/93
Cadmium	0.52	U	0.52	6010	11/23/93
Chromium	11		1.0	6010	11/23/93
Copper	9.0		2.6	6010	11/23/93
Iron	10000	N*	10	6010	11/23/93
Nickel	17	N	4.2	6010	11/23/93
Lead	8.6	N	1.1	7421	11/09/93
Mercury	0.022	U	0.022	7471	11/06/93
Silver	1.0	U	1.0	6010	11/23/93
Zinc	20		2.1	6010	11/23/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

(512) 892-6684
409832-003-01 Work Order: B3-10-300

SAMPLE ID: A1507
SAMPLE DATE: 10/21/93 17:08:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10 MG/KG	11/03/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1507
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/04/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporti			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	1.5	JB	10	1,1,2-Trichloroethane	5	U	5
Acetone	5.0	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	5	U	5	Bromoform	5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	4.5	JB	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	99	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	110	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1507
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

	Result	Reporting			Result	Report	
		Qual	Limit			Qual	Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
Methylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.27	JB	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1507
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	73	23 - 120
2-Fluorobiphenyl	85	30 - 115
Terphenyl-D14	83	18 - 137
Phenol-D5	64	24 - 113
2-Fluorophenol	84	25 - 121
2,4,6-Tribromophenol	66	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684

409832-003-01 Work Order: B3-10-300

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1507**
 SAMPLE DATE: **10/21/93**
 SAMPLE MATRIX: **SOIL**
 DILUTION FACTOR (6010): **116.279**
 UNITS: **MG/KG**

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	4.6	N	1.1	7060	11/09/93
Aluminum	9000	N*	23	6010	11/23/93
Barium	76	N*	23	6010	11/23/93
Beryllium	1.1		0.58	6010	11/23/93
Cadmium	0.58	U	0.58	6010	11/23/93
Chromium	13		1.2	6010	11/23/93
Copper	9.8		2.9	6010	11/23/93
Iron	13000	N*	12	6010	11/23/93
Nickel	20	N	4.7	6010	11/23/93
Lead	8.6	N	0.33	7421	11/09/93
Mercury	0.022	U	0.022	7471	11/06/93
Silver	1.2	U	1.2	6010	11/23/93
Zinc	25		2.3	6010	11/23/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684

409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1508
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 10/31/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

Reporting				Reporting			
	Result	Qual	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	93	88 - 110
BROMOFLUOROBENZENE	98	86 - 115
1,2-DICHLOROETHANE-D4	102	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

SAMPLE ID: LAB BLANK #1
SAMPLE DATE:
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.010U	0.010 MG/KG	11/02/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1
 SAMPLE DATE: not spec
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

			Reporting						Reporti		
			Result	Qual	Limit				Result	Qual	Limit
Chloromethane	10	U	10			1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10			trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10			Trichloroethene	5	U	5		
Chloroethane	10	U	10			Chlorodibromomethane	5	U	5		
Methylene chloride	10	U	10			1,1,2-Trichloroethane	5	U	5		
Acetone	100	U	100			Benzene	5	U	5		
Carbon disulfide	5	U	5			cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5			2-Chloroethylvinyl ether	10	U	10		
1,1-Dichloroethane	5	U	5			Bromoform	5	U	5		
trans-1,2-Dichloroethene	5	U	5			2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5			4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5			Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5			1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	3.1	J	100			Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5			Chlorobenzene	5	U	5		
Carbon tetrachloride	5	U	5			Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10			Styrene	5	U	5		
Dichlorobromomethane	5	U	5			Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	97	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	102	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: AEM HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
 SAMPLE DATE: not spec
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/02/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

UNITS:	MG/KG	Reporting			Report			
		Result	Qual	Limit		Result	Qual	Limi
Phenol		0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether		0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol		0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene		0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene		0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol		0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene		0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol		0.330	U	0.330	Diethylphthalate	0.330	U	0.330
3(2-Chloroisopropyl)ether		0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
Methylphenol		0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine		0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane		0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene		0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone		0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol		0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol		0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid		0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane		0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol		0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene		0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene		0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline		0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene		0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol		0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene		0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene		0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol		0.330	U	0.330	Di-n-octylphthalate	0.14	U	0.330
2,4,5-Trichlorophenol		0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene		0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline		0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate		0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene		0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
					Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	81	23 - 120
2-Fluorobiphenyl	80	30 - 115
Terphenyl-D14	89	18 - 137
Phenol-D5	66	24 - 113
2-Fluorophenol	66	25 - 121
2,4,6-Tribromophenol	78	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1
 SAMPLE DATE: not spec
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 1.00000
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/09/93
Aluminum	0.20	U	0.20	6010	11/23/93
Barium	0.20	U	0.20	6010	11/23/93
Beryllium	0.0050	U	0.0050	6010	11/23/93
Cadmium	0.0050	U	0.0050	6010	11/23/93
Chromium	0.010	U	0.010	6010	11/23/93
Copper	0.025	U	0.025	6010	11/23/93
Iron	0.10	U	0.10	6010	11/23/93
Nickel	0.040	U	0.040	6010	11/23/93
Lead	0.0030	U	0.0030	7421	11/09/93
Mercury	0.00020	U	0.00020	7471	11/06/93
Silver	0.010	U	0.010	6010	11/23/93
Zinc	0.020	U	0.020	6010	11/23/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #2
 SAMPLE DATE:
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/03/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporti			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	0.7	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	5.3	J	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	2.6	J	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	98	74 - 121
1,2-DICHLOROETHANE-D4	105	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #3
 SAMPLE DATE:
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/04/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporti			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	3.2	J	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	100	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	99	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684

409832-003-01

Work Order: B3-10-300

SAMPLE ID: LAB BLANK

SAMPLE DATE:

SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
TPH - IR		1.0U	1.0 MG/L	11/05/93	EPA418_1
Chromium VI		0.010U	0.010 MG/L	10/22/93	EPA7196

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK
 SAMPLE DATE: not spec
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 10/31/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

Reporting				Reporti			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	11		10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	97	88 - 110
BROMOFLUOROBENZENE	95	86 - 115
1,2-DICHLOROETHANE-D4	101	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-300

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK
 SAMPLE DATE: not spec
 SAMPLE MATRIX: WATER
 EXTRACTION DATE: 10/29/93
 ANALYSIS DATE: 11/04/93
 DILUTION FACTOR: 1.0

UNITS: UG/L

	Reporting				Report		
	Result	Qual	Limit		Result	Qual	Limit
Phenol	10	U	10	2,6-Dinitrotoluene	10	U	10
bis(2-Chloroethyl)ether	10	U	10	3-Nitroaniline	25	U	25
2-Chlorophenol	10	U	10	Acenaphthene	10	U	10
1,3-Dichlorobenzene	10	U	10	2,4-Dinitrophenol	25	U	25
1,4-Dichlorobenzene	1.4	J	10	4-Nitrophenol	25	U	25
Benzyl alcohol	10	U	10	Dibenzofuran	10	U	10
1,2-Dichlorobenzene	10	U	10	2,4-Dinitrotoluene	10	U	10
2-Methylphenol	10	U	10	Diethylphthalate	10	U	10
(2-Chloroisopropyl)ether	10	U	10	4-Chlorophenyl-phenylether	10	U	10
Methylphenol	10	U	10	Fluorene	10	U	10
N-Nitroso-di-n-propylamine	10	U	10	4-Nitroaniline	10	U	10
Hexachloroethane	10	U	10	4,6-Dinitro-2-methylphenol	25	U	25
Nitrobenzene	10	U	10	N-Nitrosodiphenylamine (1)	10	U	10
Isophorone	10	U	10	4-Bromophenyl-phenylether	10	U	10
2-Nitrophenol	10	U	10	Hexachlorobenzene	10	U	10
2,4-Dimethylphenol	10	U	10	Pentachlorophenol	25	U	25
Benzoic Acid	10	U	10	Phenanthrene	10	U	10
bis(2-Chloroethoxy)methane	10	U	10	Anthracene	10	U	10
2,4-Dichlorophenol	10	U	10	Di-n-butylphthalate	10	U	10
1,2,4-Trichlorobenzene	10	U	10	Fluoranthene	10	U	10
Naphthalene	10	U	10	Pyrene	10	U	10
4-Chloroaniline	10	U	10	Butylbenzylphthalate	10	U	10
Hexachlorobutadiene	10	U	10	3,3'-Dichlorobenzidine	10	U	10
4-Chloro-3-methylphenol	10	U	10	Benzo(a)anthracene	10	U	10
2-Methylnaphthalene	10	U	10	Chrysene	10	U	10
Hexachlorocyclopentadiene	10	U	10	bis(2-Ethylhexyl)phthalate	10	U	10
2,4,6-Trichlorophenol	10	U	10	Di-n-octylphthalate	10	U	10
2,4,5-Trichlorophenol	10	U	10	Benzo(b)fluoranthene	10	U	10
2-Chloronaphthalene	10	U	10	Benzo(k)fluoranthene	10	U	10
2-Nitroaniline	25	U	25	Benzo(a)pyrene	10	U	10
Dimethylphthalate	10	U	10	Indeno(1,2,3-cd)pyrene	10	U	10
Acenaphthylene	10	U	10	Dibenzo(a,h)anthracene	10	U	10
				Benzo(g,h,i)perylene	10	U	10

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	68	35 - 114
2-Fluorobiphenyl	75	43 - 116
Terphenyl-D14	89	33 - 141
Phenol-D5	65	10 - 94
2-Fluorophenol	67	21 - 100
2,4,6-Tribromophenol	67	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/06/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-300

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK
 SAMPLE DATE: not spec
 SAMPLE MATRIX: WATER
 DILUTION FACTOR (6010): 1.0
 UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.10	U	0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0030	U	0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/08/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.020	U	0.020	6010	11/16/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

SAMPLE ID: LAB BLANK #2
SAMPLE DATE:
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.010U	0.010 MG/KG	11/03/93	EPA7196

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-300

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME TPH - IR

TEST CODE 418_1

418_1

Method 418.1: Total Recoverable Petroleum Hydrocarbons, infrared spectrophotometric method. Methods for the chemical analysis of water and wastes. USEPA.

TEST NAME ICP Metals

TEST CODE 6010

Metals by ICP

Inductively coupled emission spectroscopy according to Method 6010, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

Hazardous Substance
List Volatiles

Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance
List Extractables

Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction followed by GC/MS analysis.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS_GF

Arsenic
Graphite
Furnace

Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes, EPA-600/4-82-055, December 1982.

TEST NAME Chromium VI

TEST CODE CR_VI

Chromium VI

Method 7196, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Colorimetric analysis. Equivalent to Standard Methods 3500-Cr D.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

(512) 892-6684
409832-003-01 Work Order: B3-10-300

TEST NAME Mercury

TEST CODE HG_AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption. Method 7470 is used for water.

Method 245.5-"Technical Additions to Methods for Chemical Analysis of Water and Wastes," EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK2

Method not available.

TEST NAME Lead - Graphite Furnace

TEST CODE PB_GF

Lead
Graphite
Furnace

EPA 7421, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition.
EPA 239.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes," EPA-600/4-82-055, December 1982.

TEST NAME ICPES Digestion - Water

TEST CODE Z3005

Water Digestion

Method 3005A, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Digestion procedure for the preparation of surface and ground water samples for analysis by flame atomic absorption spectroscopy and inductively coupled plasma spectroscopy. The procedure determines total recoverable or dissolved metals.

TEST NAME GFAA Digestion - Water

TEST CODE Z3020

Water Digestion

Method 3020, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for Graphite Furnace.

Company: IT CORPORATION
Date: 12/06/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-300

409832-003-01

TEST NAME GFAA Digestion - Soil

TEST CODE Z3050F

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for Graphite Furnace/Flame AA analysis.

TEST NAME ICPES Digestion - Soil

TEST CODE Z3050P

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for ICPES analysis. Equivalent to Method 3050A, SW-846 Update I, July 1992.



ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD *

Reference Document No. 314070
Page 1 of 2

409832.03.01

Project Name/No. ¹ THAB-5001 Samples Shipment Date ⁷ 10-21-93
Sample Team Members ² Andrew Gordon Lab Destination ⁸ ITAS Austin
Profit Center No. ³ 3527 Lab Contact ⁹ Karen Deane
Project Manager ⁴ Jimmy Taylor Project Contact/Phone ¹² 405-336-2260
Purchase Order No. ⁶ 409832.03 DA-5001 Carrier/Waybill No. ¹³ FX 8440755422 Report to: ¹⁰ Tim Jennings
Required Report Date ¹¹ 15 Days

Bill to: ⁵ 409832.03.01
D.O. 5001

ONE CONTAINER PER LINE

Sample ¹⁴ Number	Sample ¹⁵ Description/Type	Date/Time ¹⁶ Collected	Container ¹⁷ Type	Sample ¹⁸ Volume	Pre- ¹⁹ servative	Requested Testing ²⁰ Program	Condition on ²¹ Receipt	Disposal ²² Record No.
A1013	Water	10-15-93	Clear gloes	40x2	COOL-HL	8240	Good 10C	8384410A
A1014	Soil	10-21-93		125	COOL	8240	Good 10C	8384410A
A1015		10-21-93		500		8270/6000	Good 10C	8384410A
A1015		10-21-93		125		8240	Good 10C	8384410A
A1015		10-21-93		500		8270/6000	Good 10C	8384410A
A1016		10-21-93		125		8240	Good 10C	8384410A
A1016		10-21-93		500		8270/6000	Good 10C	8384410A

Special Instructions: ²³

Possible Hazard Identification: ²⁴

Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Turnaround Time Required: ²⁶

Normal ☒ Rush ☐

1. Relinquished by ²⁸ [Signature] Date: 10-21-93 Time: 1800

2. Relinquished by [Signature] Date: Time:

3. Relinquished by [Signature] Date: Time:

Comments: ²⁹

Sample Disposal: ²⁵ Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Project Specific (Specify):

1. Received by ²⁸ [Signature] Date: 10/22/93 Time: 0837

2. Received by [Signature] Date: Time:

3. Received by [Signature] Date: Time:



**INTERNATIONAL
TECHNOLOGY**

**ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD (cont.) ***

Reference Document No. ³⁰ 344070
Page 2 of 2

Project Name 74FB-5001

Project No. 4098337-03.01-520/ Samples Shipment Date 10-21-93

ONE CONTAINER PER LINE

Sample 14 Number	Sample 15 Description/Type	Date/Time Collected 16	Container Type 17	Sample 18 Volume	Pre-19 servative	Requested Testing Program 20	Condition on 21 Receipt	Disposal 22 Record No.
A1017	Soil	10-21-93 1410	clear glass	175ml	COOL	8240	Good 1°C	
A1017	Soil	10-21-93 1410	1	500ml	COOL	8270/6000	th. 10/21/93	
A1018	Water	10-21-93 1415	clear glass	40ml	HL COOL	8240	In Recs	
A1018	Water	10-21-93 1415	Poly	35ml	NO ₃ COOL	6000		
A1018	Water	10-21-93 1415	Amber glass	1L	H ₂ SO ₄ COOL	8270		
A1019 (ms/cool)	Soil	10-21-93 1420	clear glass	125	COOL	8240		
A1019 (ms/cool)		10-21-93 1420		500		8270/6000		
A1020		10-21-93 1430		125		8240		
A1020		10-21-93 1430		500		8270/6000		
A1021		10-21-93 1435		125		8240		
A1021		10-21-93 1435		500		8270/6000		

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions



INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD *

Reference Document No. 514065
Page 1 of 2

Project Name/No. 1 **ITFB 409832** Samples Shipment Date 7 **10/21/93** Bill to: 5 **409832.02**
Sample Team Members 2 **L. Rodriguez/H. Wilson** Lab Destination 8 **IT - AUSTIN** D.O. 5001
Profit Center No. 3 **3527** Lab Contact 9 **Karen Dean**
Project Manager 4 **Jimmy Taylor** Project Contact/Phone 12 **Don McGee 505** Report to: 10 **Tim Jennings**
Purchase Order No. 6 **409832.002** Carrier/Waybill No. 13 **Feb E. 8460755483** **IT - Austin**
Required Report Date 11 **NTAT**

ONE CONTAINER PER LINE

Sample 14 Number	Sample 15 Description/Type	Date/Time Collected	Container Type	Sample 18 Volume	Pre- 19 servative	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
A 1500	SB-015 Soil	10/21/93	clear glass	125ml	cool	8240 VOA	Good for use only	
A 1500	SB-015 Soil	10/21/93	clear glass	500ml	cool	8370 6010/7000	Good for use only	
A 1501	SB-016 Soil	10/21/93	clear glass	125ml	"	8240 VOA		
A 1501	SB-016 Soil	10/21/93	"	500ml	"	8370 6010/7000		
A 1502	SB-017 Soil	10/21/93	"	125ml	"	8240 VOA		
A 1502	SB-017 Soil	10/21/93	"	500ml	"	8370 6010/7000		
A 1503	SB-017 Duplicate	10/21/93	"	125ml	"	8240 VOA		
A 1503	SB-017 Duplicate	10/21/93	"	500ml	"	8370 6010/7000		

Special Instructions: 23

Possible Hazard Identification: 24

Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Turnaround Time Required: 26

Normal ☒ Rush ☐

QC Level: 27

1. ☐ 2. ☐ 3. ☐

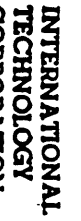
Sample Disposal: 25

Return to Client ☐ Disposal by Lab ☒ Archive

(mos.)

1. Relinquished by 28 (Signature/Affiliation) <i>Matthew A. Wilson Austin</i>	Date: 10/21/93 Time: 1921	1. Received by 28 (Signature/Affiliation) <i>Matthew A. Wilson</i>	Date: 10/21/93 Time: 0837
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29



Reference Document No. 30 314065
Page 3 of 22

Samples Shipment Date 10/21/93

Sample Number	Sample Description/Type	Date/Time Collected	Container, Type	Sample Volume	Pre- servative	Requested Testing Program	Condition on Receipt	Disposal Record No.
Sample 14	Sample 15	Date/Time 16 Collected	Container 17 Type	Sample 18 Volume	Pre-19 servative	Requested Testing 20 Program	Condition on 21 Receipt	Disposal 22 Record No.

Sample 14 Number	Sample 15 Description/Type	Date/Time Collected	Container Type	Sample 18 Volume	Pre-19 servative	Requested Testing Program	Condition on 21 Receipt	Disposal 22 Record No.
A 1504	Egpt. Rinsata	1505 10/21/93	Clear glass	40ml	HCl	8240 VOA	Good 100	133244/100 A
A 1504	" "	1505 10/21/93	Plastic	250ml	HNO3	6210/7000 Metals	100% 10/21/93	133244/100 A
A 1504	" "	1505 10/21/93	Amber glass	2.5L	cool	8270 Suoc	100% 10/21/93	133244/100 A
A 1505	SB-018 Soil	1600 10/21/93	Clear glass	125ml	cool	8240 VOC	100% 10/21/93	133244/100 A
A 1505	SB-018 Soil	1600 10/21/93	Clear glass	500ml	cool	6010/7000 8270	100% 10/21/93	133244/100 A
A 1506	SB-019 Soil	1650 10/21/93	Clear glass	125ml	"	8240 VOC	100% 10/21/93	133244/100 A
A 1506	SB-019 Soil	1650 10/21/93	"	500ml	"	8270 Suoc 8010/7000 metals	100% 10/21/93	133244/100 A
A 1507	SB-020 Soil	1708 10/21/93	"	125ml	"	8240 VOC	100% 10/21/93	133244/100 A
A 1507	SB-020 Soil	1708 10/21/93	"	500ml	"	8270 Suoc 6010/7000 metals	100% 10/21/93	133244/100 A
A 1508	Trip Blank	1700 10/19/93	Clear glass	40ml	HCl	8240 VOC	100% 10/19/93	133244/100 A

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1014

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	100
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	102
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	100

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1015

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03B						
	Arsenic	B310300-21B	11053050F1	03/05/94	11/09/93	97
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	114
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	97

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1016

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	97
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	109
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	97

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1017

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
<hr/>						
05B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	102
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	116
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	408

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1018

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
06B						
	Arsenic	B310300-24B	110930201	11/09/93	11/12/93	1.0
	Mercury	B310300-24B	1108HGAA1	11/08/93	11/08/93	1.0
	418_1	B310300-24B	1103TPHIR1	11/03/93	11/05/93	1.0
	Lead	B310300-24B	110930201	11/09/93	11/11/93	1.0

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1019

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
07B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	115
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	120
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	460

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1019-MS

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
08B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	430
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	106
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	430

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1019-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
09B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	377
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	112
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	377

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1020

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
10B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	105
	Chromium VI	B310300-25A	1103CR_VI1	11/03/93	11/03/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	103
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	105

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1021

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
11B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	103
	Chromium VI	B310300-25A	1103CR_VI1	11/03/93	11/03/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	109
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	103

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1500

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
12B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/10/93	543
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	104
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	109

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1501

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
13B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	92.6
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	118
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	370

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1502

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
14B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	106
	Chromium VI	B310300-25A	1103CR_VI1	11/03/93	11/03/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	104
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	106

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1503

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
15B						
	Arsenic	B310300-21B	11053050F1	03/25/94	11/09/93	116
	Chromium VI	B310300-25A	1103CR_VI1	11/03/93	11/03/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	119
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	116

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1504

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
16B						
	Arsenic	B310300-24B	110930201	11/09/93	11/12/93	1.0
	Chromium VI	B310300-24B	1022CR_VI1	10/22/93	10/22/93	1.0
	Mercury	B310300-24B	1108HGAA1	11/08/93	11/08/93	1.0
	Lead	B310300-24B	110930201	11/09/93	11/11/93	1.0

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1505

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
17B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	104
	Chromium VI	B310300-25A	1103CR_VI1	11/03/93	11/03/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	116
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	104

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1506

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
18B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	92.6
	Chromium VI	B310300-25A	1103CR_VI1	11/03/93	11/03/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	111
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	370

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : A1507

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
19B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	111
	Chromium VI	B310300-25A	1103CR_VI1	11/03/93	11/03/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	112
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	111

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : LAB BLANK #1

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
21B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	1.0
	Chromium VI	B310300-21B	1102CR VI1	11/02/93	11/02/93	1.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	1.0
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	1.0

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : LAB BLANK

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
24B						
	Arsenic	B310300-24B	110930201	11/09/93		1.0
	Chromium VI	B310300-24B	1122CR_VI1	10/22/93	10/22/93	1.0
	Mercury	B310300-21B	1108HGAA1	11/08/93		1.0
	Lead	B310300-24B	110930201	11/09/93		1.0

Auxiliary Data Summary

12/03/93

Work order : B310300

Sample ID : LAB BLANK #2

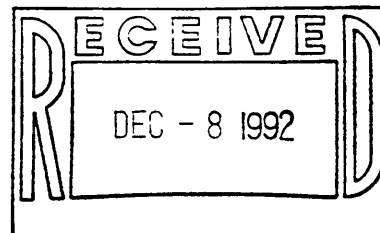
FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
25A	Chromium VI	B310300-25A	1103CR_VI1	11/03/93	11/03/93	1.0

TPJ

Routed to K- CF. 7L 12/9/93



ANALYTICAL SERVICES



CERTIFICATE OF ANALYSIS

IT CORPORATION
1250 CAPITAL OF TX HWY
BLDG. 3, SUITE 200
AUSTIN, TX 78746-6443
TIM JENNINGS

Date: 12/04/93

Work Order: B3-10-313

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O.5001
Date Received: 10/25/93
Number of Samples: 11
Sample Type: WATER

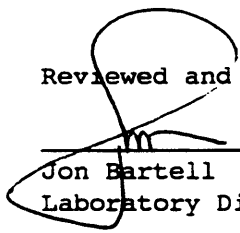
409832-003-01

I. Introduction

Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
A1509	B3-10-313-01
A1510	B3-10-313-02
A1511	B3-10-313-03
A1512	B3-10-313-04
A1513	B3-10-313-05
A1514	B3-10-313-06
A1515	B3-10-313-07
A1516	B3-10-313-08
LAB BLANK #1	B3-10-313-09
LAB BLANK #2	B3-10-313-10
LAB BLANK #3	B3-10-313-11

Reviewed and Approved:


Jon Bartell
Laboratory Director

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-313

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-313

409832-003-01

SAMPLE ID: A1509
SAMPLE DATE: 10/22/93 10:17:00
SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u>	<u>Result</u>	<u>Reporting</u>	<u>Date</u>	<u>Method</u>
	<u>Ref</u>		<u>Limit</u> <u>Units</u>	<u>Analyzed</u>	<u>Reference</u>
TPH - IR		1.0U	1.0 MG/L	11/10/93	EPA418_1
Total Organic Carbon		17	5.0 MG/L	11/11/93	EPA415_1

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1509
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 10/31/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

Reporting				Reporting			
Result		Qual	Limit	Result		Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	6.7	BJ	10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	96	86 - 115
1,2-DICHLOROETHANE-D4	97	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1509
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 EXTRACTION DATE: 10/27/93
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0

	UNITS: UG/L			Reporting			Reportin		
	Result	Qual	Limit	Result	Qual	Limit	Result	Qual	Limit
Phenol	10	U	10	2,6-Dinitrotoluene	10	U	10		
bis(2-Chloroethyl)ether	10	U	10	3-Nitroaniline	25	U	25		
2-Chlorophenol	10	U	10	Acenaphthene	10	U	10		
1,3-Dichlorobenzene	10	U	10	2,4-Dinitrophenol	25	U	25		
1,4-Dichlorobenzene	1.0	JB	10	4-Nitrophenol	25	U	25		
Benzyl alcohol	10	U	10	Dibenzofuran	10	U	10		
1,2-Dichlorobenzene	10	U	10	2,4-Dinitrotoluene	10	U	10		
2-Methylphenol	10	U	10	Diethylphthalate	10	U	10		
(2-Chloroisopropyl)ether	10	U	10	4-Chlorophenyl-phenylether	10	U	10		
.ethylphenol	10	U	10	Fluorene	10	U	10		
N-Nitroso-di-n-propylamine	10	U	10	4-Nitroaniline	10	U	10		
Hexachloroethane	10	U	10	4,6-Dinitro-2-methylphenol	25	U	25		
Nitrobenzene	10	U	10	N-Nitrosodiphenylamine (1)	10	U	10		
Isophorone	10	U	10	4-Bromophenyl-phenylether	10	U	10		
2-Nitrophenol	10	U	10	Hexachlorobenzene	10	U	10		
2,4-Dimethylphenol	10	U	10	Pentachlorophenol	25	U	25		
Benzoic Acid	10	U	10	Phenanthrene	10	U	10		
bis(2-Chloroethoxy)methane	10	U	10	Anthracene	10	U	10		
2,4-Dichlorophenol	10	U	10	Di-n-butylphthalate	10	U	10		
1,2,4-Trichlorobenzene	10	U	10	Fluoranthene	10	U	10		
Naphthalene	10	U	10	Pyrene	10	U	10		
4-Chloroaniline	10	U	10	Butylbenzylphthalate	10	U	10		
Hexachlorobutadiene	10	U	10	3,3'-Dichlorobenzidine	10	U	10		
4-Chloro-3-methylphenol	10	U	10	Benzo(a)anthracene	10	U	10		
2-Methylnaphthalene	10	U	10	Chrysene	10	U	10		
Hexachlorocyclopentadiene	10	U	10	bis(2-Ethylhexyl)phthalate	10	U	10		
2,4,6-Trichlorophenol	10	U	10	Di-n-octylphthalate	10	U	10		
2,4,5-Trichlorophenol	10	U	10	Benzo(b)fluoranthene	10	U	10		
2-Chloronaphthalene	10	U	10	Benzo(k)fluoranthene	10	U	10		
2-Nitroaniline	25	U	25	Benzo(a)pyrene	10	U	10		
Dimethylphthalate	10	U	10	Indeno(1,2,3-cd)pyrene	10	U	10		
Acenaphthylene	10	U	10	Dibenzo(a,h)anthracene	10	U	10		
				Benzo(g,h,i)perylene	10	U	10		

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-313

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1509
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	57	35 - 114
2-Fluorobiphenyl	61	43 - 116
Terphenyl-D14	55	33 - 141
Phenol-D5	60	10 - 94
2-Fluorophenol	45	21 - 100
2,4,6-Tribromophenol	74	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-313

409832-003-01

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1509**
 SAMPLE DATE: **10/22/93**
 SAMPLE MATRIX: **WATER**
 DILUTION FACTOR (6010): **1.00000**
 UNITS: **MG/L**

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.34		0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.013		0.010	6010	11/16/93
Copper	0.16		0.025	6010	11/16/93
Iron	0.16		0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0030	U	0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/11/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.039		0.020	6010	11/16/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-313

409832-003-01

SAMPLE ID: A1510
SAMPLE DATE: 10/22/93 10:17:00
SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
TPH - IR		1.0U	1.0 MG/L	11/10/93	EPA418_1
Total Organic Carbon		18	5.0 MG/L	11/11/93	EPA415_1

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-313

409832-003-01

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1510
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 10/31/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	6.9	BJ	10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	93	88 - 110
BROMOFLUOROBENZENE	95	86 - 115
1,2-DICHLOROETHANE-D4	102	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1510
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 EXTRACTION DATE: 10/27/93
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0

UNITS:	UG/L	Reporting			Reporting		
		Result	Qual	Limit	Result	Qual	Limit
Phenol	10	U	10	2,6-Dinitrotoluene	10	U	10
bis(2-Chloroethyl)ether	10	U	10	3-Nitroaniline	25	U	25
2-Chlorophenol	10	U	10	Acenaphthene	10	U	10
1,3-Dichlorobenzene	10	U	10	2,4-Dinitrophenol	25	U	25
1,4-Dichlorobenzene	10	U	10	4-Nitrophenol	25	U	25
Benzyl alcohol	10	U	10	Dibenzofuran	10	U	10
1,2-Dichlorobenzene	10	U	10	2,4-Dinitrotoluene	10	U	10
2-Methylphenol	10	U	10	Diethylphthalate	10	U	10
(2-Chloroisopropyl)ether	10	U	10	4-Chlorophenyl-phenylether	10	U	10
4-Methylphenol	10	U	10	Fluorene	10	U	10
N-Nitroso-di-n-propylamine	10	U	10	4-Nitroaniline	10	U	10
Hexachloroethane	10	U	10	4,6-Dinitro-2-methylphenol	25	U	25
Nitrobenzene	10	U	10	N-Nitrosodiphenylamine (1)	10	U	10
Isophorone	10	U	10	4-Bromophenyl-phenylether	10	U	10
2-Nitrophenol	10	U	10	Hexachlorobenzene	10	U	10
2,4-Dimethylphenol	10	U	10	Pentachlorophenol	25	U	25
Benzoic Acid	10	U	10	Phenanthrene	10	U	10
bis(2-Chloroethoxy)methane	10	U	10	Anthracene	10	U	10
2,4-Dichlorophenol	10	U	10	Di-n-butylphthalate	10	U	10
1,2,4-Trichlorobenzene	10	U	10	Fluoranthene	10	U	10
Naphthalene	10	U	10	Pyrene	10	U	10
4-Chloroaniline	10	U	10	Butylbenzylphthalate	10	U	10
Hexachlorobutadiene	10	U	10	3,3'-Dichlorobenzidine	10	U	10
4-Chloro-3-methylphenol	10	U	10	Benzo(a)anthracene	10	U	10
2-Methylnaphthalene	10	U	10	Chrysene	10	U	10
Hexachlorocyclopentadiene	10	U	10	bis(2-Ethylhexyl)phthalate	10	U	10
2,4,6-Trichlorophenol	10	U	10	Di-n-octylphthalate	10	U	10
2,4,5-Trichlorophenol	10	U	10	Benzo(b)fluoranthene	10	U	10
2-Chloronaphthalene	10	U	10	Benzo(k)fluoranthene	10	U	10
2-Nitroaniline	25	U	25	Benzo(a)pyrene	10	U	10
Dimethylphthalate	10	U	10	Indeno(1,2,3-cd)pyrene	10	U	10
Acenaphthylene	10	U	10	Dibenzo(a,h)anthracene	10	U	10
				Benzo(g,h,i)perylene	10	U	10

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-313

TEST NAME: AEN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1510
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	47	35 - 114
2-Fluorobiphenyl	56	43 - 116
Terphenyl-D14	81	33 - 141
Phenol-D5	47	10 - 94
2-Fluorophenol	35	21 - 100
2,4,6-Tribromophenol	81	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-313

409832-003-01

TEST NAME: Metals
METHOD REFERENCE: EPA6010

SAMPLE ID: A1510
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER
DILUTION FACTOR (6010): 1.00000
UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.35		0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.16		0.025	6010	11/16/93
Iron	0.14		0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0030	U	0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/11/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.049		0.020	6010	11/16/93

Data qualifier key:

E - estimated value
M - duplicate injection precision not met
N - spike recovery not within control limits
S - determined by MSA
W - post-digestion spike for Furnace AA is out of control limits (85-115%),
while sample absorbance is <50% of spike absorbance
* - duplicate analysis outside control limits
+ - Correlation coefficient for the MSA <0.995
B - < CRDL but >= IDL
U - none detected
'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-313

409832-003-01

SAMPLE ID: A1511
SAMPLE DATE: 10/22/93 11:00:00
SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u>	<u>Result</u>	<u>Reporting</u>	<u>Date</u>	<u>Method</u>
	<u>Ref</u>		<u>Limit</u> <u>Units</u>	<u>Analyzed</u>	<u>Reference</u>
TPH - IR		1.0U	1.0 MG/L	11/10/93	EPA418_1
Total Organic Carbon		1.2	1.0 MG/L	11/17/93	EPA415_1

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-313

409832-003-01

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1511
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 10/31/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	5.7	BJ	10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
trans-1,2-Dichloroethene	5	U	5	Bromoform	5	U	5
cis-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
Chloroform	5	U	5	4-Methyl-2-pentanone	50	U	50
1,2-Dichloroethane	5	U	5	Tetrachloroethene	5	U	5
2-Butanone	100	U	100	1,1,2,2-Tetrachloroethane	5	U	5
1,1,1-Trichloroethane	5	U	5	Toluene	5	U	5
Carbon tetrachloride	5	U	5	Chlorobenzene	5	U	5
Vinyl acetate	10	U	10	Ethylbenzene	5	U	5
Dichlorobromomethane	5	U	5	Styrene	5	U	5
				Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	94	88 - 110
BROMOFLUOROBENZENE	97	86 - 115
1,2-DICHLOROETHANE-D4	102	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-313

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1511
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 DILUTION FACTOR (6010): 1.00000
 UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.011		0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0030	U	0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/11/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.020	U	0.020	6010	11/16/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-313

409832-003-01

SAMPLE ID: A1512
SAMPLE DATE: 10/22/93 14:10:00
SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
TPH - IR		1.0U	1.0 MG/L	11/10/93	EPA418_1
Total Organic Carbon		11	5.0 MG/L	11/11/93	EPA415_1

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-313

409832-003-01

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1512
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 11/01/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	11		5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
trans-1,2-Dichloroethene	5	U	5	Bromoform	5	U	5
cis-1,2-Dichloroethene	120		5	2-Hexanone	50	U	50
Chloroform	5	U	5	4-Methyl-2-pentanone	50	U	50
1,2-Dichloroethane	5	U	5	Tetrachloroethene	16		5
2-Butanone	100	U	100	1,1,2,2-Tetrachloroethane	5	U	5
1,1,1-Trichloroethane	5	U	5	Toluene	5	U	5
Carbon tetrachloride	5	U	5	Chlorobenzene	5	U	5
Vinyl acetate	10	U	10	Ethylbenzene	5	U	5
Dichlorobromomethane	5	U	5	Styrene	5	U	5
				Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	93	88 - 110
BROMOFLUOROBENZENE	104	86 - 115
1,2-DICHLOROETHANE-D4	98	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-313

409832-003-01

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1512
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 EXTRACTION DATE: 10/27/93
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0

	UNITS: UG/L			Reporting				Reporting		
	Result	Qual	Limit	Result	Qual	Limit		Result	Qual	Limit
Phenol	10	U	10	2,6-Dinitrotoluene	10	U	10			
bis(2-Chloroethyl)ether	10	U	10	3-Nitroaniline	25	U	25			
2-Chlorophenol	10	U	10	Acenaphthene	10	U	10			
1,3-Dichlorobenzene	10	U	10	2,4-Dinitrophenol	25	U	25			
1,4-Dichlorobenzene	1.2	JB	10	4-Nitrophenol	25	U	25			
Benzyl alcohol	10	U	10	Dibenzofuran	10	U	10			
1,2-Dichlorobenzene	10	U	10	2,4-Dinitrotoluene	10	U	10			
2-Methylphenol	10	U	10	Diethylphthalate	10	U	10			
(2-Chloroisopropyl)ether	10	U	10	4-Chlorophenyl-phenylether	10	U	10			
4-Methylphenol	10	U	10	Fluorene	10	U	10			
N-Nitroso-di-n-propylamine	10	U	10	4-Nitroaniline	10	U	10			
Hexachloroethane	10	U	10	4,6-Dinitro-2-methylphenol	25	U	25			
Nitrobenzene	10	U	10	N-Nitrosodiphenylamine (1)	10	U	10			
Isophorone	10	U	10	4-Bromophenyl-phenylether	10	U	10			
2-Nitrophenol	10	U	10	Hexachlorobenzene	10	U	10			
2,4-Dimethylphenol	10	U	10	Pentachlorophenol	25	U	25			
Benzoic Acid	10	U	10	Phenanthrene	10	U	10			
bis(2-Chloroethoxy)methane	10	U	10	Anthracene	10	U	10			
2,4-Dichlorophenol	10	U	10	Di-n-butylphthalate	10	U	10			
1,2,4-Trichlorobenzene	10	U	10	Fluoranthene	10	U	10			
Naphthalene	10	U	10	Pyrene	10	U	10			
4-Chloroaniline	10	U	10	Butylbenzylphthalate	10	U	10			
Hexachlorobutadiene	10	U	10	3,3'-Dichlorobenzidine	10	U	10			
4-Chloro-3-methylphenol	10	U	10	Benzo(a)anthracene	10	U	10			
2-Methylnaphthalene	10	U	10	Chrysene	10	U	10			
Hexachlorocyclopentadiene	10	U	10	bis(2-Ethylhexyl)phthalate	10	U	10			
2,4,6-Trichlorophenol	10	U	10	Di-n-octylphthalate	10	U	10			
2,4,5-Trichlorophenol	10	U	10	Benzo(b)fluoranthene	10	U	10			
2-Chloronaphthalene	10	U	10	Benzo(k)fluoranthene	10	U	10			
2-Nitroaniline	25	U	25	Benzo(a)pyrene	10	U	10			
Dimethylphthalate	10	U	10	Indeno(1,2,3-cd)pyrene	10	U	10			
Acenaphthylene	10	U	10	Dibenzo(a,h)anthracene	10	U	10			
				Benzo(g,h,i)perylene	10	U	10			

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1512
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	70	35 - 114
2-Fluorobiphenyl	74	43 - 116
Terphenyl-D14	90	33 - 141
Phenol-D5	71	10 - 94
2-Fluorophenol	47	21 - 100
2,4,6-Tribromophenol	88	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-313

TEST NAME: Metals
METHOD REFERENCE: EPA6010

SAMPLE ID: A1512
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER
DILUTION FACTOR (6010): 1.00000
UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.10	U	0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.012		0.0030	7421	11/11/93
Mercury	0.00080	U	0.00080	7471	11/11/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.027		0.020	6010	11/16/93

Data qualifier key:

E - estimated value
M - duplicate injection precision not met
N - spike recovery not within control limits
S - determined by MSA
W - post-digestion spike for Furnace AA is out of control limits (85-115%),
while sample absorbance is <50% of spike absorbance
* - duplicate analysis outside control limits
+ - Correlation coefficient for the MSA <0.995
B - < CRDL but >= IDL
U - none detected
'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-313

SAMPLE ID: A1513
SAMPLE DATE: 10/22/93 14:10:00
SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
TPH - IR		1.0U	1.0	MG/L	11/10/93	EPA418_1
Total Organic Carbon		8.5	5.0	MG/L	11/11/93	EPA415_1

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1513
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 11/01/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	11		5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	110		5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	16		5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	93	88 - 110
BROMOFLUOROBENZENE	102	86 - 115
1,2-DICHLOROETHANE-D4	101	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1513
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 EXTRACTION DATE: 10/27/93
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0

UNITS:	UG/L	Reporting				Reporting		
		Result	Qual	Limit		Result	Qual	Limit
Phenol		10	U	10	2,6-Dinitrotoluene	10	U	10
bis(2-Chloroethyl)ether		10	U	10	3-Nitroaniline	25	U	25
2-Chlorophenol		10	U	10	Acenaphthene	10	U	10
1,3-Dichlorobenzene		10	U	10	2,4-Dinitrophenol	25	U	25
1,4-Dichlorobenzene		10	U	10	4-Nitrophenol	25	U	25
Benzyl alcohol		10	U	10	Dibenzofuran	10	U	10
1,2-Dichlorobenzene		10	U	10	2,4-Dinitrotoluene	10	U	10
2-Methylphenol		10	U	10	Diethylphthalate	10	U	10
(2-Chloroisopropyl)ether		10	U	10	4-Chlorophenyl-phenylether	10	U	10
4-Methylphenol		10	U	10	Fluorene	10	U	10
N-Nitroso-di-n-propylamine		10	U	10	4-Nitroaniline	10	U	10
Hexachloroethane		10	U	10	4,6-Dinitro-2-methylphenol	25	U	25
Nitrobenzene		10	U	10	N-Nitrosodiphenylamine (1)	10	U	10
Isophorone		10	U	10	4-Bromophenyl-phenylether	10	U	10
2-Nitrophenol		10	U	10	Hexachlorobenzene	10	U	10
2,4-Dimethylphenol		10	U	10	Pentachlorophenol	25	U	25
Benzoic Acid		10	U	10	Phenanthrene	10	U	10
bis(2-Chloroethoxy)methane		10	U	10	Anthracene	10	U	10
2,4-Dichlorophenol		10	U	10	Di-n-butylphthalate	10	U	10
1,2,4-Trichlorobenzene		10	U	10	Fluoranthene	10	U	10
Naphthalene		10	U	10	Pyrene	10	U	10
4-Chloroaniline		10	U	10	Butylbenzylphthalate	10	U	10
Hexachlorobutadiene		10	U	10	3,3'-Dichlorobenzidine	10	U	10
4-Chloro-3-methylphenol		10	U	10	Benzo(a)anthracene	10	U	10
2-Methylnaphthalene		10	U	10	Chrysene	10	U	10
Hexachlorocyclopentadiene		10	U	10	bis(2-Ethylhexyl)phthalate	10	U	10
2,4,6-Trichlorophenol		10	U	10	Di-n-octylphthalate	10	U	10
2,4,5-Trichlorophenol		10	U	10	Benzo(b)fluoranthene	10	U	10
2-Chloronaphthalene		10	U	10	Benzo(k)fluoranthene	10	U	10
2-Nitroaniline		25	U	25	Benzo(a)pyrene	10	U	10
Dimethylphthalate		10	U	10	Indeno(1,2,3-cd)pyrene	10	U	10
Acenaphthylene		10	U	10	Dibenzo(a,h)anthracene	10	U	10
					Benzo(g,h,i)perylene	10	U	10

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1513
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	66	35 - 114
2-Fluorobiphenyl	66	43 - 116
Terphenyl-D14	71	33 - 141
Phenol-D5	61	10 - 94
2-Fluorophenol	54	21 - 100
2,4,6-Tribromophenol	74	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-313

409832-003-01

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1513
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 DILUTION FACTOR (6010): 1.00000
 UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.11		0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0077		0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/11/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.020	U	0.020	6010	11/16/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-313

409832-003-01

SAMPLE ID: A1514
SAMPLE DATE: 10/22/93 14:49:00
SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
TPH - IR		1.0U	1.0	MG/L	11/10/93	EPA418_1
Total Organic Carbon		1.0U	1.0	MG/L	11/14/93	EPA415_1

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-313

409832-003-01

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1514
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 11/01/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

	Reporting				Reporting		
	Result	Qual	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,1-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	101	86 - 115
1,2-DICHLOROETHANE-D4	96	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1514
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 EXTRACTION DATE: 10/27/93
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0

UNITS:	UG/L	Reporting			Reporting		
		Result	Qual	Limit	Result	Qual	Limit
Phenol	10	U	10	2,6-Dinitrotoluene	10	U	10
bis(2-Chloroethyl)ether	10	U	10	3-Nitroaniline	25	U	25
2-Chlorophenol	10	U	10	Acenaphthene	10	U	10
1,3-Dichlorobenzene	10	U	10	2,4-Dinitrophenol	25	U	25
1,4-Dichlorobenzene	10	U	10	4-Nitrophenol	25	U	25
Benzyl alcohol	10	U	10	Dibenzofuran	10	U	10
1,2-Dichlorobenzene	10	U	10	2,4-Dinitrotoluene	10	U	10
2-Methylphenol	10	U	10	Diethylphthalate	10	U	10
(2-Chloroisopropyl)ether	10	U	10	4-Chlorophenyl-phenylether	10	U	10
4-Methylphenol	10	U	10	Fluorene	10	U	10
N-Nitroso-di-n-propylamine	10	U	10	4-Nitroaniline	10	U	10
Hexachloroethane	10	U	10	4,6-Dinitro-2-methylphenol	25	U	25
Nitrobenzene	10	U	10	N-Nitrosodiphenylamine (1)	10	U	10
Isophorone	10	U	10	4-Bromophenyl-phenylether	10	U	10
2-Nitrophenol	10	U	10	Hexachlorobenzene	10	U	10
2,4-Dimethylphenol	10	U	10	Pentachlorophenol	25	U	25
Benzoic Acid	10	U	10	Phenanthrene	10	U	10
bis(2-Chloroethoxy)methane	10	U	10	Anthracene	10	U	10
2,4-Dichlorophenol	10	U	10	Di-n-butylphthalate	10	U	10
1,2,4-Trichlorobenzene	10	U	10	Fluoranthene	10	U	10
Naphthalene	10	U	10	Pyrene	10	U	10
4-Chloroaniline	10	U	10	Butylbenzylphthalate	10	U	10
Hexachlorobutadiene	10	U	10	3,3'-Dichlorobenzidine	10	U	10
4-Chloro-3-methylphenol	10	U	10	Benzo(a)anthracene	10	U	10
2-Methylnaphthalene	10	U	10	Chrysene	10	U	10
Hexachlorocyclopentadiene	10	U	10	bis(2-Ethylhexyl)phthalate	10	U	10
2,4,6-Trichlorophenol	10	U	10	Di-n-octylphthalate	10	U	10
2,4,5-Trichlorophenol	10	U	10	Benzo(b)fluoranthene	10	U	10
2-Chloronaphthalene	10	U	10	Benzo(k)fluoranthene	10	U	10
2-Nitroaniline	25	U	25	Benzo(a)pyrene	10	U	10
Dimethylphthalate	10	U	10	Indeno(1,2,3-cd)pyrene	10	U	10
Acenaphthylene	10	U	10	Dibenzo(a,h)anthracene	10	U	10
				Benzo(g,h,i)perylene	10	U	10

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1514
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	66	35 - 114
2-Fluorobiphenyl	68	43 - 116
Terphenyl-D14	99	33 - 141
Phenol-D5	44	10 - 94
2-Fluorophenol	51	21 - 100
2,4,6-Tribromophenol	79	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-313

409832-003-01

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1514
 SAMPLE DATE: 10/22/93
 SAMPLE MATRIX: WATER
 DILUTION FACTOR (6010): 1.00000
 UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.10	U	0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0030	U	0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/11/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.020	U	0.020	6010	11/16/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%),
 while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1515
 SAMPLE DATE: 10/20/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 11/01/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

			Reporting						Reporting		
			Result	Qual	Limit				Result	Qual	Limit
Chloromethane	10	U	10			1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10			trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10			Trichloroethene	5	U	5		
Chloroethane	10	U	10			Chlorodibromomethane	5	U	5		
Methylene chloride	10	U	10			1,1,2-Trichloroethane	5	U	5		
Acetone	100	U	100			Benzene	5	U	5		
Carbon disulfide	5	U	5			cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5			2-Chloroethylvinyl ether	10	U	10		
1,2-Dichloroethane	5	U	5			Bromoform	5	U	5		
trans-1,2-Dichloroethene	5	U	5			2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5			4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5			Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5			1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	100	U	100			Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5			Chlorobenzene	5	U	5		
Carbon tetrachloride	5	U	5			Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10			Styrene	5	U	5		
Dichlorobromomethane	5	U	5			Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	102	86 - 115
1,2-DICHLOROETHANE-D4	105	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1516
 SAMPLE DATE: 10/20/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 11/01/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
trans-1,2-Dichloroethane	5	U	5	Bromoform	5	U	5
cis-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
Chloroform	5	U	5	4-Methyl-2-pentanone	50	U	50
1,2-Dichloroethane	5	U	5	Tetrachloroethene	5	U	5
2-Butanone	100	U	100	1,1,2,2-Tetrachloroethane	5	U	5
1,1,1-Trichloroethane	5	U	5	Toluene	5	U	5
Carbon tetrachloride	5	U	5	Chlorobenzene	5	U	5
Vinyl acetate	10	U	10	Ethylbenzene	5	U	5
Dichlorobromomethane	5	U	5	Styrene	5	U	5
				Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	93	88 - 110
BROMOFLUOROBENZENE	97	86 - 115
1,2-DICHLOROETHANE-D4	105	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-313

409832-003-01

SAMPLE ID: LAB BLANK #1
 SAMPLE DATE:
 SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u>	<u>Ref</u>	<u>Result</u>	<u>Reporting</u>	<u>Limit</u>	<u>Units</u>	<u>Date</u>	<u>Method</u>
							<u>Analyzed</u>	<u>Reference</u>
TPH - IR			1.0U		1.0	MG/L	11/10/93	EPA418_1
Total Organic Carbon			1.0U		1.0	MG/L	11/11/93	EPA415_1

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1
 SAMPLE DATE: not spec
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 10/31/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	11		10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	97	88 - 110
BROMOFLUOROBENZENE	95	86 - 115
1,2-DICHLOROETHANE-D4	101	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/04/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-313

409832-003-01

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
 SAMPLE DATE: not spec
 SAMPLE MATRIX: WATER
 EXTRACTION DATE: 10/27/93
 ANALYSIS DATE: 11/04/93
 DILUTION FACTOR: 1.0

	UNITS:	UG/L	Reporting				UNITS:	UG/L	Reporting		
			Result	Qual	Limit				Result	Qual	Limit
Phenol			10	U	10	2,6-Dinitrotoluene		10	U	10	
bis(2-Chloroethyl)ether			10	U	10	3-Nitroaniline		25	U	25	
2-Chlorophenol			10	U	10	Acenaphthene		10	U	10	
1,3-Dichlorobenzene			10	U	10	2,4-Dinitrophenol		25	U	25	
1,4-Dichlorobenzene		1.4	J		10	4-Nitrophenol		25	U	25	
Benzyl alcohol			10	U	10	Dibenzofuran		10	U	10	
1,2-Dichlorobenzene			10	U	10	2,4-Dinitrotoluene		10	U	10	
2-Methylphenol			10	U	10	Diethylphthalate		10	U	10	
(2-Chloroisopropyl)ether			10	U	10	4-Chlorophenyl-phenylether		10	U	10	
4-Methylphenol			10	U	10	Fluorene		10	U	10	
N-Nitroso-di-n-propylamine			10	U	10	4-Nitroaniline		10	U	10	
Hexachloroethane			10	U	10	4,6-Dinitro-2-methylphenol		25	U	25	
Nitrobenzene			10	U	10	N-Nitrosodiphenylamine (1)		10	U	10	
Isophorone			10	U	10	4-Bromophenyl-phenylether		10	U	10	
2-Nitrophenol			10	U	10	Hexachlorobenzene		10	U	10	
2,4-Dimethylphenol			10	U	10	Pentachlorophenol		25	U	25	
Benzoic Acid			10	U	10	Phenanthrene		10	U	10	
bis(2-Chloroethoxy)methane			10	U	10	Anthracene		10	U	10	
2,4-Dichlorophenol			10	U	10	Di-n-butylphthalate		10	U	10	
1,2,4-Trichlorobenzene			10	U	10	Fluoranthene		10	U	10	
Naphthalene			10	U	10	Pyrene		10	U	10	
4-Chloroaniline			10	U	10	Butylbenzylphthalate		10	U	10	
Hexachlorobutadiene			10	U	10	3,3'-Dichlorobenzidine		10	U	10	
4-Chloro-3-methylphenol			10	U	10	Benzo(a)anthracene		10	U	10	
2-Methylnaphthalene			10	U	10	Chrysene		10	U	10	
Hexachlorocyclopentadiene			10	U	10	bis(2-Ethylhexyl)phthalate		10	U	10	
2,4,6-Trichlorophenol			10	U	10	Di-n-octylphthalate		10	U	10	
2,4,5-Trichlorophenol			10	U	10	Benzo(b)fluoranthene		10	U	10	
2-Chloronaphthalene			10	U	10	Benzo(k)fluoranthene		10	U	10	
2-Nitroaniline			25	U	25	Benzo(a)pyrene		10	U	10	
Dimethylphthalate			10	U	10	Indeno(1,2,3-cd)pyrene		10	U	10	
Acenaphthylene			10	U	10	Dibenzo(a,h)anthracene		10	U	10	
						Benzo(g,h,i)perylene		10	U	10	

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-313

409832-003-01

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	68	35 - 114
2-Fluorobiphenyl	75	43 - 116
Terphenyl-D14	89	33 - 141
Phenol-D5	65	10 - 94
2-Fluorophenol	67	21 - 100
2,4,6-Tribromophenol	67	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-313

409832-003-01

TEST NAME: Metals
METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER
DILUTION FACTOR (6010): 1.00000
UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.10	U	0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0030	U	0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/11/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.020	U	0.020	6010	11/16/93

Data qualifier key:

E - estimated value
M - duplicate injection precision not met
N - spike recovery not within control limits
S - determined by MSA
W - post-digestion spike for Furnace AA is out of control limits (85-115%),
while sample absorbance is <50% of spike absorbance
* - duplicate analysis outside control limits
+ - Correlation coefficient for the MSA <0.995
B - < CRDL but >= IDL
U - none detected
'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
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Work Order: B3-10-313

409832-003-01

SAMPLE ID: LAB BLANK #2
SAMPLE DATE:
SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u>	<u>Result</u>	<u>Reporting</u>	<u>Date</u>	<u>Method</u>
	<u>Ref</u>		<u>Limit</u> <u>Units</u>	<u>Analyzed</u>	<u>Reference</u>
Total Organic Carbon		1.0U	1.0 MG/L	11/14/93	EPA415_1

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-313

409832-003-01

SAMPLE ID: LAB BLANK #3
SAMPLE DATE:
SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u>	<u>Ref</u>	<u>Result</u>	<u>Reporting</u>	<u>Limit</u>	<u>Units</u>	<u>Date</u>	<u>Method</u>
							<u>Analyzed</u>	<u>Reference</u>
Total Organic Carbon			1.0U		1.0	MG/L	11/17/93	EPA415_1

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-313

409832-003-01

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME TPH - IR

TEST CODE 418_1

418_1

Method 418.1: Total Recoverable Petroleum Hydrocarbons, infrared spectrophotometric method. Methods for the chemical analysis of water and wastes. USEPA.

TEST NAME ICP Metals

TEST CODE 6010

Metals by ICP

Inductively coupled emission spectroscopy according to Method 6010, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

Hazardous Substance
List Volatiles

Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABW HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance
List Extractables

Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction followed by GC/MS analysis.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS_GF

Arsenic
Graphite
Furnace

Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes, EPA-600/4-82-055, December 1982.

TEST NAME Mercury

TEST CODE HG_AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption. Method 7470 is used for water.

Company: IT CORPORATION
Date: 12/04/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-313

TEST NAME Mercury

TEST CODE HG_AA

Method 245.5-"Technical Additions to Methods for
Chemical Analysis of Water and Wastes,"
EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK2

Method not available.

TEST NAME Lead - Graphite Furnace

TEST CODE PB_GF

Lead
Graphite
Furnace

EPA 7421, SW-846, Test Methods for Evaluating Solid
Wastes, Third Edition.
EPA 239.2-Technical Additions to Methods for Chemical
Analysis of Water and Wastes," EPA-600/4-82-055,
December 1982.

TEST NAME Total Organic Carbon

TEST CODE TOC

Total Organic
Carbon

Method 415.1-Chemical Analysis of Water and Wastewater.
Chemical oxidation and nondispersive
infrared analysis. Equivalent to SW-846 Method 9060.
Sample prep is instrument manufacturer specific.

TEST NAME ICPES Digestion - Water

TEST CODE Z3005

Water Digestion

Method 3005A, SW-846, Test Methods for Evaluating Solid
Wastes, Third Edition. Digestion procedure for the
preparation of surface and ground water samples for
analysis by flame atomic absorption spectroscopy and
inductively coupled plasma spectroscopy. The procedure
determines total recoverable or dissolved metals.

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Company: IT CORPORATION
Date: 12/04/93
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IT ANALYTICAL SERVICES
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TEST NAME GFAA Digestion - Water

TEST CODE Z3020

Water Digestion

Method 3020, SW-846, Test Methods for Evaluating Solid
Wastes, Third Edition. Acid digestion technique for
Graphite Furnace.

Project Name/No. Timber 5001 Samples Shipment Date 10/22/93 Bill to: 409832.03.01
Sample Team Members M. Wilson/L. Rodriguez Lab Destination ITAS - Austin P.O. 5001
Profit Center No. 3527 Lab Contact Harmon, Deane
Project Manager Jimmy Taylor Project Contact/Phone 405 736-2260
Purchase Order No. 4109832.003 Carrier/Waybill No. 8460755494 Report to: Tim Jennings
Required Report Date NTAT

ONE CONTAINER PER LINE

Sample ¹⁴ Number	Sample ¹⁵ Description/Type	Date/Time ¹⁶ Collected	Container ¹⁷ Type	Sample ¹⁸ Volume	Pre- ¹⁹ servative	Requested Testing ²⁰ Program	Condition on Receipt ²¹	Disposal ²² Record No.
A1509	WS-013 water	10/17	clear glass	40ml	HCl	8240 VOC	Good, AVE 4°C 10/25/93	0324400
A1509	" "	" "	amber glass	2.5L	COO1	8270 SVOC		
A1509	" "	" "	amber glass	1L	H2SO4	418.1 TPH		
A1509	" "	" "	" "	250ml	H2SO4	415.1 TAC		
A1509	" "	" "	Plastic	250ml	HNO3	6010/7000 metals		
A1510	WS-013 duplicate water	10/17	clear glass	40ml	HCl	8240 VOC		0324400
A1510	WS-013 duplicate water	" "	amber glass	2.5L	COO1	8270 SVOC		
A1510	" "	" "	" "	1L	H2SO4	418.1 TPH		

Special Instructions: ²³Possible Hazard Identification: ²⁴Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒Sample Disposal: ²⁵Return to Client ☐ Disposal by Lab ☒ Archive ☐ (mos.)Turnaround Time Required: ²⁶Normal ☒ Rush ☐QC Level: ²⁷

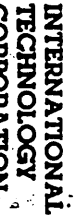
Project Specific (specify):

1. Relinquished by ²⁸ (Signature/Affiliation)	Date: <u>10/22/93</u> Time: <u>1634</u>	1. Received by ²⁸ (Signature/Affiliation)	Date: <u>10/25/93</u> Time: <u>0906</u>
2. Relinquished by (Signature/Affiliation)	Date: _____ Time: _____	2. Received by (Signature/Affiliation)	Date: _____ Time: _____
3. Relinquished by (Signature/Affiliation)	Date: _____ Time: _____	3. Received by (Signature/Affiliation)	Date: _____ Time: _____
Comments: ²⁹			

White: To accompany samples

Yellow: Field copy

* See back of form for special instructions



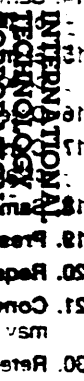
Reference Document No. 420743
Page 2 of 3

Samples Shipment Date 10/22/93

ONE CONTAINER PER LINE

Sample 14 Number	Sample 15 Description/Type	Date/Time Collected	Container Type	Sample 18 Volume	Pre-19 servative	Requested Testing Program	Condition on Receipt	Disposal Record No.
A 1510	Duplicate WS-013 water	10/22/93 1017	amber glass	250ml	H ₂ SO ₄	415.1 TOC	Good, AKA, 40% 125hrs	
A 1510	"	"	Plastic	250ml	HNO ₃	6010/7000 metals		
A 1511	field blank WS-013 water	10/22/93 1100	40ml clear glass	40ml	HCl	8240 VOC		83244/100
A 1511	"	"	2.5 L amber glass		COOL	8270 SVOC		
A 1511	"	"	1 L " "	"	H ₂ SO ₄	418.1 TPH		
A 1511	"	"	250 ml " "	"	H ₂ SO ₄	415.1 TOC		
A 1511	"	"	250 ml Plastic	"	HNO ₃	6010/7000 metals		
A 1512	WS-015 water	10/22/93 1410	40ml clear glass	40ml	HCl	8240 VOC		83244/100
A 1512	WS-015 water	10/22/93 1410	2.5 L amber glass		COOL	8270 SVOC		
A 1512	"	"	1 L " "	"	H ₂ SO ₄	418.1 TPH		
A 1512	"	"	250 ml " "	"	HNO ₃	415.1 TOC		
A 1512	"	"	250 ml Plastic	"	HNO ₃	6010/7000 metals		
A 1513	water WS-015 duplicate	10/22/93 1410	clear glass	40ml	HCl	8240 VOC		83244/100
A 1513	"	"	amber glass	2.5 L	COOL	8270 SVOC		
A 1513	"	"	"	1 L	H ₂ SO ₄	418.1 TPH		
A 1513	"	"	"	250ml	H ₂ SO ₄	415.1 TOC		
A 1513	"	"	Plastic	250ml	HNO ₃	6010/7000 metals		
A 1514	water WS-015 field blank	10/22/93 1414	clear glass	40ml	HCl	8240 VOC		83244/100
A 1514	"	"	amber glass	2.5 L	COOL	8270 SVOC		
A 1514	"	"	"	1 L	H ₂ SO ₄	418.1 TPH		

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions



Reference Document No. ³⁰ 420743
Page 3 of 3

Samples Shipment Date 10/22/93

ONE CONTAINER PER LINE

Sample Number	Sample Description/Type	Date/Time Collected	Container Type	Sample Volume	Pre-19 preservative	Requested Testing Program	Condition on Receipt	Disposal Record No.
A1514	WGS-015 Field Blank	10/28/93 1449	amber glass	850ml	H ₂ SO ₄	415.1 TOC	600, YL, R/V 10/25/95	
A1514		11	plastic	250ml	HNO ₃	6010/7000 metals		
A1515	Trip Blank	10/30/93 1700	clear glass	40ml	HCl	8240 VOC		
A1516	Trip Blank	10/30/93 1700	clear glass	40ml	HCl	8240 VOC		

Auxiliary Data Summary

12/03/93

Work order : B310313

Sample ID : A1509

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
01C	418_1	B310313-09C	1104TPHIR3	11/04/93	11/10/93	1.0
01D	TOC	B310313-09D	1111TOC1	11/11/93	11/11/93	5.0
01E						
	Arsenic	B310313-09E	111030201	11/10/93	11/12/93	1.0
	Mercury	B310313-09E	1111HGAA1	11, 11/93	11/11/93	1.0
	Lead	B310313-09E	111030201	11/10/93	11/11/93	1.0

Auxiliary Data Summary

12/03/93

Work order : B310313

Sample ID : A1510

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02C	418_1	B310313-09C	1104TPHIR3	11/04/93	11/10/93	1.0
02D	TOC	B310313-09D	1111TOC1	11/11/93	11/11/93	5.0
02E	Arsenic	B310313-09E	111030201	11/10/93	11/12/93	1.0
	Mercury	B310313-09E	1111HGAA1	01/11/93	11/11/93	1.0
	Lead	B310313-09E	111030201	11/10/93	11/11/93	1.0

Auxiliary Data Summary

12/03/93

Work order : B310313

Sample ID : A1511

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03C	418_1	B310313-09C	1104TPHIR3	11/04/93	11/10/93	1.0
03D	TOC	B310313-11A	1117TOC1	11/17/93	11/17/93	1.0
03E						
	Arsenic	B310313-09E	111030201	11/10/93	11/12/93	1.0
	Mercury	B310313-09E	1111HGAA1	11/11/93	11/11/93	1.0
	Lead	B310313-09E	111030201	11/10/93	11/11/93	1.0

Auxiliary Data Summary

12/03/93

Work order : B310313

Sample ID : A1512

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04C	418_1	B310313-09C	1104TPHIR3	11/04/93	11/10/93	1.0
04D	TOC	B310313-09D	1111TOC1	11/11/93	11/11/93	5.0
04E						
	Arsenic	B310313-09E	111030201	11/10/93	11/12/93	1
	Mercury	B310313-09E	1111HGAA1	11/11/93	11/11/93	4
	Lead	B310313-09E	111030201	11/10/93	11/11/93	1

Auxiliary Data Summary

12/03/93

Work order : B310313

Sample ID : A1513

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
05C	418_1	B310313-09C	1104TPHIR3	11/04/93	11/10/93	1.0
05D	TOC	B310313-09D	1111TOC1	11/11/93	11/11/93	5.0
05E						
	Arsenic	B310313-09E	111030201	11/10/93	11/12/93	1.0
	Mercury	B310313-09E	1111HGAA1	11/11/93	11/11/93	1.0
	Lead	B310313-09E	111030201	11/10/93	11/11/93	1.0

Auxiliary Data Summary

12/03/93

Work order : B310313

Sample ID : A1514

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
06C	418_1	B310313-09C	1104TPHIR3	11/04/93	11/10/93	1.0
06D	TOC	B310313-10A	1114TOC1	11/14/93	11/14/93	1.0
06E						
	Arsenic	B310313-09E	111030201	11/10/93	11/12/93	1.0
	Mercury	B310313-09E	1111HGAA1	11/11/93	11/11/93	1.0
	Lead	B310313-09E	111030201	11/10/93	11/11/93	1.0

Auxiliary Data Summary

12/03/93

Work order : B310313

Sample ID : LAB BLANK #1

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
09D	TOC	B310313-09D	1111TOC1	11/11/93	11/11/93	1.0
09E	6010				11/19/93	
	Arsenic	B310313-09E	111030201	11/10/93	11/12/93	1.0
	Mercury	B310313-09E	1111HGAA1	11/11/93	11/11/93	1.0
	Lead	B310313-09E	111030201	11/10/93	11/11/93	1.0

Auxiliary Data Summary

12/03/93

Work order : B310313

Sample ID : LAB BLANK #2

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
10A	TOC	B310313-10A	1114TOC1	11/14/93	11/14/93	1.0

Auxiliary Data Summary

12/03/93

Work order : B310313

Sample ID : LAB BLANK #3

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
11A	TOC	B310313-11A	1117TOC1	11/17/93	11/17/93	1.0

APPENDIX C
SITE SURVEY REPORT

Phone: (405) 843-4847
WATS: (800) 884-3219
FAX: (405) 843-0976



Surveying and Mapping for Oklahoma's Energy Industry

6709 N. Classen Blvd.

Oklahoma City, Oklahoma 73116

International Technology Corporation
Attn.: Joe Pacelli
312 Directors Drive
Knoxville, Tn 37923
Reference: IT Subcontract No. **547295**
IDO-5001
Bid 93116

(Survey Contract)
4.4 Documentation of Surveying Activities

Survey Contractor:

Topographic Land Surveyors of Oklahoma
6709 N. Classen Blvd.
Oklahoma City, Oklahoma 73116
Edward D. (Deral) Paulk, PLS
President
Harry McClintick, PLS
Party Chief
(405) 843-4847

Instrumentation:

Work done was completed with a Topcon/Sokkisha Model C3E. Last calibration by the factory was done 10/10/1993 and was checked daily by standard survey methods to determine that the tolerance was within factory limits. The unique serial number for the instrument is # 153047. The data collector was a Hewlett-Packard 48SX using the TDS Survey card.

Methods:

Standard mil-spec survey methods were employed during the survey and included.
Double sets of repetitive angles, both in horizontal and vertical.
Distance in Meters and Feet for double redundancy.

Control Points:

All control points used were set by the Corps of Engineers and the coordinates were supplied to us in NAD-83 Meters, Oklahoma North Zone (3501) based upon the Lambert projection. Typical numbers were;

BM SE (secondary control points)

BM PR (Primary control points)

These points were established by Trimble 4000SE GPS receivers and are capable of obtaining accuracy in the centimeter range. During our survey we confirmed this accuracy and due to the nature of GPS usage, we did not balance our traverse of the monumentation. See explanation beginning on page three, this document.

Tabulation of Vertical and Horizontal Coordinates:

In sheet form broken into per site information in three formats.

NAD-83 Meters

NAD-27 Feet

NAD-83 Feet

Field Notes, Calculations and Reduction Techniques:

All field work was performed using Total Station and no reduction was necessary. Grid and Sea level factors used in the calculations are attached as part of this report. No paper field notes were kept, except diagrams explaining shot points. These are included as drawings and are part of the digital information supplied.

Actual closure of each particular site is disclosed within this document beginning on page 4.

This survey is true and accurate based upon monumentation supplied by Tinker Air Force Base.



Edward D. Paulk, PLS #1279
Topographic Land Surveyors of Oklahoma
6709 N. Classen Blvd.
Oklahoma City, Oklahoma 73116



USAGE OF GPS MONUMENTATION

Qualifications:

We are a Trimble Navigation dealer for the Midwest and have had crews surveying using GPS for over two years. Edward D. Paulk, has attended training and seminars continually to maintain a level of experience and technical knowledge of GPS that exceeds specs of GPS surveys.

During the course of our preliminary survey, we had closures that exceeded specs and we were forced to continue surveys back to our point of beginning to check our accuracy. We continually proved our surveys by closures exceeding 1 in 10,000, but we could not achieve this using the provided GPS monumentation and closing on a third monument.

We contacted the base mapping department and learned that the monuments were set using 4000SE receivers (GPS) by the Corps of Engineers. The 4000SE is capable of accuracy on any point of +/- 1-3 Centimeters. After this determination, we were well within specs of their given coordinates.

Their survey closure was probably quite good given the distances that they monumented, however when you use relatively close monuments as our survey dictated and very few traverse points, the error looks poor. Had we shot a mile away, then back to add some footage to our survey, the closure would have been much better. Since this technique is only used to comply with a pure mathematical closure, not a better survey, and would not actually improve positional accuracy, we did not do this.

Site by Site Report

File HM-A

HCL Tank

4 Soil Borings

IT Drawing #409832 Fig. 5.5

Horizontal and Vertical Control was establish for (4) four Soil Borings.
BM SE-33, SE-05 and PR-07 were used for control.

Upon first completion of traverse, we closed on PR-07 with 3.041' of error, but our vertical was with 0.05'. We made a closure back to SE-05 and closed within 0.4'. This site had the only apparent large discrepancy in their control. Since SE-33 and SE-05 agreed within limits we used these to determine closure.

Horizontal Accuracy 1 in 10,000

Vertical Accuracy 1 in 95,800

File HM-B

SPILL POND

2 Soil Borings

IT Drawing #409832 Fig. 5.6

Horizontal and Vertical Control was establish for (2) Soil Borings.
BM SE-33, SE-37 and SE-42 were used for control.

Horizontal Accuracy 1 in 5902

Vertical Accuracy 1 in 12,000

We closed back upon our first monument horizontally 1 in 25,000 as a check.

File HM-C

Sludge Drying Beds and Old Pesticide Area

13 Soil Borings

6 Monitor Wells

7 SG Points

IT Drawing # 409832 Fig. 5.3 and 5.7

Horizontal and Vertical Control was established for (13) Soil Borings, (6) Six Monitor wells and (7) SG Points.

BM SE-41, SE-45 and SE-47 were used for control.

Horizontal Accuracy 1 in 8725

Vertical Accuracy 1 in 390,000

We closed back upon BM SE-45 as a check and closed 1 in 14,000 Horizontally.

FileHM-D**Fuel Truck***(8) Soil Borings**(3) Monitor Wells**(3) SG Points*

IT Drawing #409832 Fig. 5.4

Horizontal and Vertical Control was established for (8) Soil Borings, (3) Monitor wells and (3) SG Points.

BM PR-02, SE-16 and PR-03 were used for control.

Horizontal Accuracy 1 in 22,586

Vertical Accuracy 1 in 20,000

File HM-E**Ordinance Disposal Area***(5) Soil Borings**(4) Corners of area as per staked and Dan McGregor's instructions.*

IT Drawing #409832 Fig. 5.1

Horizontal and Vertical Control was established for (5) Soil Borings, (4) Corners of area.

BM SE-19, PR-02 and SE-016 were used for control.

Horizontal Accuracy 1 in 10,000

Vertical Accuracy 1 in 20,000

File HM-F**Fire Training Area 2***(8) Monitor Wells*

IT Drawing #409832 Fig. 5.8

Horizontal and Vertical Control was established for (8) Monitor Wells.

BM SE-37, SE-33 and BM32 were used for control.

Horizontal Accuracy 1 in 34,800

Vertical Accuracy 1 in 95,000

File HM-G**AFFF Fire Control Pond***(4) Soil Borings*

IT Drawing #409832 Fig. 5.2

Horizontal and Vertical Control was established for (4) Soil Borings.

BM SE-31, SE-22 and PR-01 were used for control.

Horizontal Accuracy 1 in 6500

Vertical Accuracy 1 in 58,000

Shots Typical

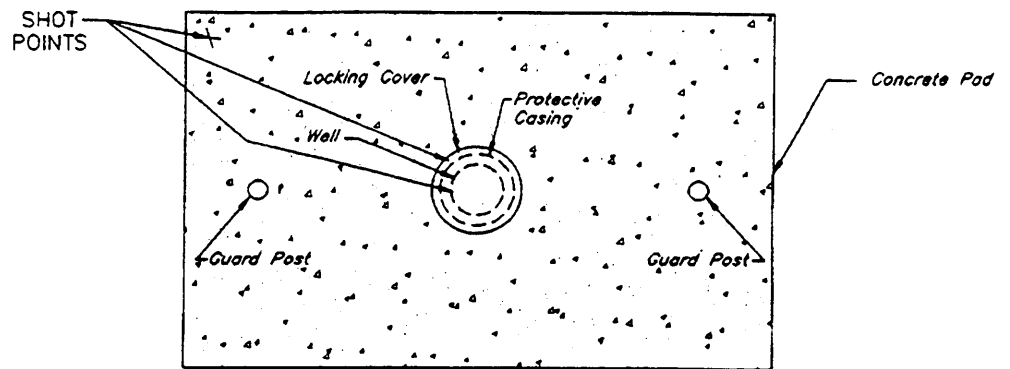
- Soil Borings-** One X,Y,Z placed center of drill hole, typically on top of concrete fill-in area.
(36) Total Soil Borings
- Monitor Well-** (*Flush mount*) Three X,Y,Z,s were placed upon each well.
1: NW Corner of concrete pad.
2: Top of retaining casing, where well number was stamped into a milled area.
3: Top of well, under seal, (X,Y determined for center, and Z determined at north lip of well.
- (*Tower Mount*) Three X,Y,Z,s were placed upon each well.
1: NW Corner of concrete pad.
2: Top of square guard, center
3: Screw cap removed, X and Y in Center and Z on the North lip of well.
(17) Total Monitoring wells. 51 points.

In addition; we determined X,Y and Z for a number of SG points. These were determined at center of dig point.

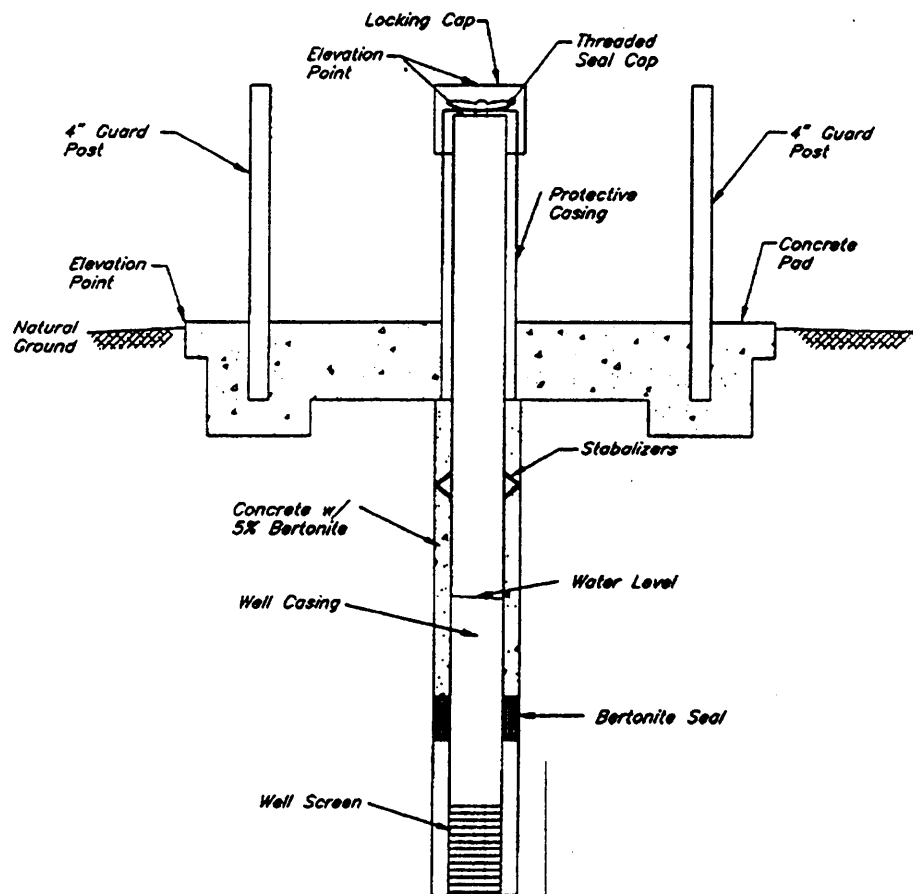
In addition; we determined X,Y and Z for four corners of an area in the **Ordinance Disposal** area as per Dan McGregor's instructions. These points were stakes set by previous contractor.

Included in this report are two drawings showing typical well layouts.

Drawing Flush.Dwg
 Tower.Dwg

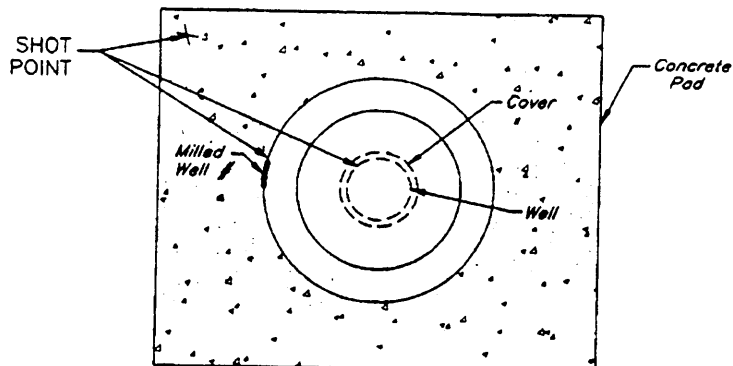


TOP VIEW

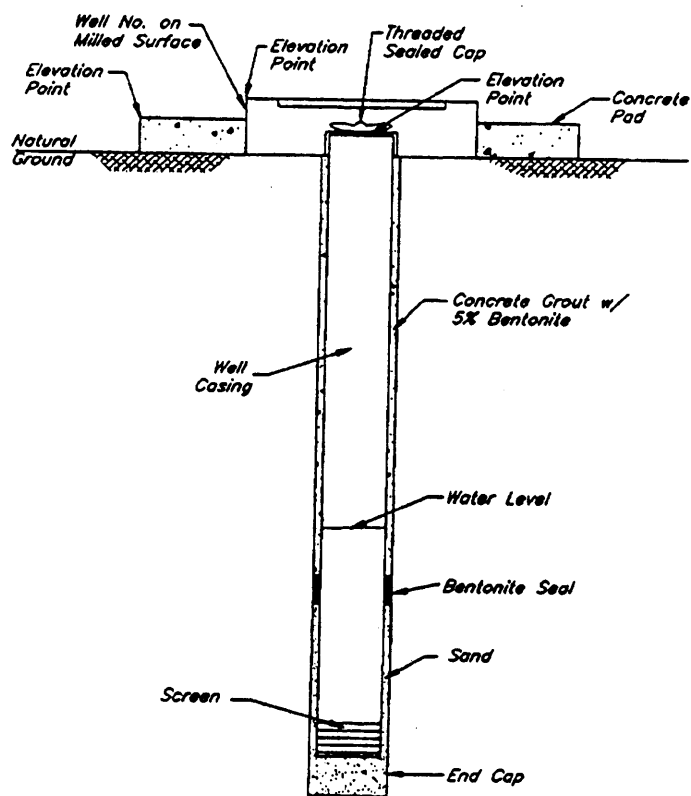


SIDE VIEW

				TYPICAL STICK-UP MONITORING WELLS		DATE: 1-19-94	
NO.	REVISION	DATE	BY			DRAWING: STICK-UP.DWG	
				TOPOGRAPHIC LAND SURVEYORS OKLAHOMA CITY, OKLAHOMA		SHEET	OF



TOP VIEW



SIDE VIEW

				TYPICAL FLUSH MOUNT MONITORING WELLS		DATE: 1-18-94	
NO.	REVISION	DATE	BY			DRAWING: FLUSH.DWG	
				TOPOGRAPHIC LAND SURVEYORS OKLAHOMA CITY, OKLAHOMA		SHEET OF	

Tinker AFB		Factors		
		Factors.txt		
Calculations for Grid Distance				
Formula Used	$1 - (1250) / (20,906,000)$	0.9999402086	Elevation Factor	
Elevation average is 1250				
Grid Factor from USGS Tables				
Average Latitude is 35-25		1.0000306000	Grid Factor	
Combination Factor is multiple of these				
		0.9999708067	Combo Factor	

Diskette FilesDisk Labeled *IDO-5001*

#547295

Text Files and Final Reports

FILE NAME**DESCRIPTION**

Report.WPS	Microsoft Works file of final report
Report.TXT	ASCII file of final report.
Finals.WB1	Quattro Pro for Windows data base All areas, control and Factors NAD-83, NAD-27
Finals.WK3	1-2-3 V.3.x database All areas, control and Factors
Hcl.TXT	ASCII of HCL Area
Spill.TXT	ASCII of Spill Pond
Sludge.TXT	ASCII of Sludge and Pesticide
Fuel.TXT	ASCII of Fuel Truck
Ordnance.TXT	ASCII of Ordnance area
Fire.TXT	ASCII of Fire Training
FireC.TXT	ASCII of Fire Control
NAD83.TXT	ASCII of X,Y,Z and Description
NAD27.TXT	ASCII of X,Y,Z and Description
Control.TXT	ASCII of X,Y,Z and Description of control monuments.
Factor.TXT	ASCII of grid/elevation factors used in calculations.

Nad 83 Datum		Format given was in meters		Nad 1927	
State Plane Lambert Coordinate System		Conversion used was			
Oklahoma North Zone		Meters X 3 280833337			
Values in Feet					
Control Coordinates from GPS					
GPS	Marker	Meters	Feet	North	East
Fire Training Center	SE24	45950.816	655852.839	2150731.043	2183669.404
	SE28	45604.798	655531.584	2150697.174	2182287.352
	SE32	45431.969	655045.990	2150663.721	2180684.178
	SE43	48303.717	654817.311	2150629.462	2178943.844
Bldg 1030 Soil Pond	SE37	45788.902	654625.746	2150595.978	2178315.440
	SE42	46296.627	654526.676	2150562.538	2178980.423
Bldg 978-AFFF	SE22	44861.607	655589.130	2150528.073	2182476.110
	SE31	44877.485	654833.045	2150494.605	2178986.530
	PR01	44381.814	655603.420	2150461.155	2182522.978
	SE45	48693.176	654086.696	2150427.687	2177546.973
Sturgeon Doping Beds	SE47	47117.173	654049.881	2150394.233	2177426.496
	SE41	48360.822	653942.053	2150360.785	2177072.383
	SE05	46999.293	656307.763	2150327.337	2184833.870
	SE08	48012.200	656807.677	2150293.889	2188473.977
HCL Tank	PR07	47640.475	656374.729	2150260.441	2185053.591
	SE16	44835.219	656910.278	2150226.993	21866810.565
	PR02	44519.768	656757.523	2150193.545	2186309.389
	SE15	44874.549	656322.201	2150160.097	2184881.187
Ordnance Disposal	SE10	45484.255	656655.015	2150126.649	2185973.103
	PR03	45229.490	657014.725	2150093.201	2187153.241
	SE03	47481.846	656307.338	2150059.753	2184832.489
	SE19	44134.062	656649.276	2150026.305	2185954.242
Fuel Truck Maint.	SE33	45572.014	654847.132	2149992.857	2180041.762
	SE38	45560.105	653975.745	2149959.409	2177182.896
	SE35	45726.546	654009.317	2149925.961	2177293.048
	SE36			2149892.513	

[illegible]

Topographic	HM-A File	HCL Tank															
Description	NAD-83 Feet		Easting	Elevation	NAD-83 Meters			Easting	Elevation	NAD-27			Easting	Elevation			
	Northing				Northing					Northing							
SB-045	153284.190		2153638.064	1275.110				658,429.578	388.654				2,185,233.520	1275.110			
SB-044	153838.492		2153821.494	1275.980				658,425.137	388.919				2,185,218.954	1275.980			
SB-042	154150.008		2153620.517	1276.230				658,424.839	388.998				2,185,217.979	1276.230			
SB-043	154445.476		2153604.478	1275.830				658,419.950	388.874				2,185,201.941	1275.830			
					Conversion Factor					NAD-27 Derived with							
					Meters X 3.28083337					Corpscon Program							
					3.28083337												

[illegible]

Topographic	Description	HM-C		Sludge and Pesticide		Conversion		3.28083337		NAD-83		NAD-27	
		NAD-83 Feet		Easting		NAD-83 Meters		Easting		Northing		Northing	
		Northing	Elevation			Northing	Elevation			Northing	Elevation		
SB-029		153312.251	2145887.278	1226.929		46729.867	654006.782	373.989		153285.911	2177284.758		1226.929
SB-030		153346.842	2145883.882	1225.960		46740.210	654005.748	373.673		153320.501	2177281.365		1225.960
SB-031		153365.289	2145884.283	1226.145		46745.833	654005.870	373.730		153336.849	2177281.766		1226.145
SB-032		153366.845	2145704.893	1226.028		46746.307	654012.152	373.693		153340.504	2177302.376		1226.028
SB-033		153369.982	2145725.373	1226.205		46747.263	654018.394	373.748		153343.640	2177322.855		1226.205
SB-034		153367.428	2145750.652	1225.884		46746.485	654026.099	373.650		153341.088	2177348.133		1225.884
NWCorPad		153327.504	2145660.862	1227.887		46734.318	653988.731	374.291		153301.164	2177258.344		1227.887
BrassTag		153325.646	2145662.385	1228.252		46733.750	653989.196	374.372		153299.307	2177259.879		1228.252
MW2-67A		153325.656	2145662.944	1227.880		46733.753	653988.366	374.259		153299.317	2177260.427		1227.880
NWCorPad		153334.792	2145660.365	1227.942		46736.538	653988.580	374.277		153308.454	2177257.848		1227.942
BrassTag		153332.588	2145662.743	1228.136		46735.865	653988.305	374.337		153306.771	2177258.977		1228.136
MW2-67B		153333.109	2145662.460	1227.749		46736.025	653989.218	374.219		153306.771	2177259.941		1227.749
SG-021		153284.259	2145661.494	1227.875		46724.183	653988.924	374.257		153267.920	2177258.977		1227.875
SG-027		153504.913	2145656.153	1227.450		46788.391	653987.296	374.128		153478.575	2177253.637		1227.450
NWCorPad		153485.156	2145668.540	1227.773		46782.369	654001.072	374.228		153458.818	2177266.025		1227.773
BrassTag		153482.661	2145670.729	1227.892		46781.608	654001.739	374.293		153456.321	2177268.214		1227.892
MW2-68A		153483.317	2145670.331	1227.639		46781.808	654001.618	374.185		153456.977	2177267.817		1227.639
NWCorPad		153498.329	2145667.974	1227.737		46786.384	654000.899	374.215		153471.990	2177265.458		1227.737
BrassTag		153497.345	2145669.894	1227.801		46786.084	654001.484	374.234		153471.006	2177267.377		1227.801
MW2-68B		153498.783	2145670.021	1227.501		46785.913	654001.523	374.143		153470.445	2177267.505		1227.501
SB-035		153513.044	2145686.160	1225.832		46790.869	654006.442	373.634		153488.704	2177283.644		1225.832
SB-041		153461.953	2145572.501	1226.184		46775.296	653971.799	373.742		153435.613	2177169.986		1226.184
SG-045		153403.851	2145548.281	1227.352		46757.587	653984.417	374.068		153377.514	2177145.766		1227.352
SG-043		153478.151	2145547.779	1227.388		46780.233	653984.264	374.109		153451.811	2177145.265		1227.388
SB-039		153436.514	2145600.936	1225.186		46767.542	653980.466	373.437		153410.174	2177198.420		1225.186
SB-040		153422.287	2145576.593	1225.367		46763.206	653973.046	373.493		153395.948	2177174.077		1225.367
SB-036		153520.297	2145709.088	1225.408		46783.080	654013.431	373.505		153493.958	2177306.573		1225.408
SB-037		153515.849	2145723.059	1225.822		46791.724	654017.689	373.631		153489.509	2177320.543		1225.822
SB-038		153515.734	2145749.026	1225.397		46791.689	654025.604	373.502		153489.394	2177346.511		1225.397
SG-030		153587.989	2145780.692	1228.246		46813.712	653985.915	374.370		153581.649	2177249.107		1228.246
SG-034		153561.346	2145780.604	1228.528		46805.591	654035.229	374.456		153535.004	2177378.177		1228.528
SG-035		153529.622	2145780.692	1228.755		46795.922	654035.256	374.525		153503.281	2177378.177		1228.755
NWCorPad		153503.822	2145892.455	1228.566		46788.058	654068.321	374.468		153477.479	2177489.938		1228.566
BrassTag		153501.522	2145894.847	1228.786		46787.357	654070.050	374.535		153475.180	2177492.330		1228.786
MW2-66B		153501.835	2145894.243	1228.424		46787.452	654069.866	374.424		153475.491	2177491.726		1228.424
NWCorPad		153512.675	2145892.637	1228.458		46790.756	654069.377	374.435		153488.331	2177490.122		1228.458
BrassTag		153511.424	2145894.290	1228.601		46790.375	654069.880	374.478		153485.081	2177491.772		1228.601
MW2-66A		153510.700	2145894.300	1228.209		46780.154	654069.883	374.359		153484.356	2177491.782		1228.209

Topographic	HM-D	Fuel Truck	NAD-83 Meters			NAD-83 Feet			NAD-83		
Description	North	East	Elevation	North	East	Elevation	North	East	North	East	Elevation
NWCorPad	148775.507	2155282.108	1295.444	45348.865	656831.283	394.852	148749.069	2186879.522	148749.069	2186879.522	1295.444
TopCap	148773.603	2155283.795	1298.011	45348.284	656831.807	395.635	148747.163	2186881.208	148747.163	2186881.208	1298.011
MW2-59	148773.597	2155283.829	1297.780	45348.283	656831.818	395.564	148747.160	2186881.244	148747.160	2186881.244	1297.780
NWCorPad	148680.914	2155133.601	1295.503	45318.033	656886.028	394.870	148654.478	2186731.015	148654.478	2186731.015	1295.503
TopCap	148679.362	2155135.280	1297.910	45317.560	656886.540	395.804	148652.928	2186732.895	148652.928	2186732.895	1297.910
MW2-61	148679.369	2155135.301	1297.669	45317.571	656886.546	395.530	148652.962	2186732.714	148652.962	2186732.714	1297.669
SG-011	148684.532	2155080.720	1293.808	45319.135	656887.113	394.292	148658.094	2186678.134	148658.094	2186678.134	1293.808
SG-007	148683.636	2155169.969	1294.398	45318.862	656887.113	394.533	148657.188	2186767.383	148657.188	2186767.383	1294.398
SB-028	148708.492	2155153.422	1295.649	45326.439	656882.069	394.915	148682.056	2186750.834	148682.056	2186750.834	1295.649
SB-028	148715.397	2155133.878	1295.280	45328.543	656886.112	394.802	148688.959	2186731.291	148688.959	2186731.291	1295.280
SB-025	148744.572	2155125.634	1295.337	45337.436	656883.600	394.820	148718.136	2186723.049	148718.136	2186723.049	1295.337
SB-024	148770.840	2155121.237	1295.452	45345.442	656882.259	394.855	148744.402	2186718.650	148744.402	2186718.650	1295.452
SB-023	148773.567	2155152.471	1295.640	45346.273	656881.780	394.912	148747.128	2186748.887	148747.128	2186748.887	1295.640
SG-003	148792.311	2155168.857	1295.340	45351.987	656887.795	394.847	148765.875	2186766.271	148765.875	2186766.271	1295.340
SB-021	148780.269	2155106.589	1295.427	45351.384	656877.795	394.847	148763.832	2186704.005	148763.832	2186704.005	1295.427
SB-022	148767.379	2155095.618	1295.804	45344.387	656874.451	394.962	148740.941	2186893.033	148740.941	2186893.033	1295.804
SB-027	148708.128	2155095.209	1295.822	45326.328	656874.328	394.967	148681.693	2186892.623	148681.693	2186892.623	1295.822
NWCorPad	148744.809	2155092.856	1295.791	45337.508	656873.609	394.958	148718.373	2186890.271	148718.373	2186890.271	1295.791
Brasstag	148743.943	2155093.661	1295.890	45337.244	656873.854	394.988	148717.506	2186891.074	148717.506	2186891.074	1295.890
MW2-60	148743.299	2155093.599	1295.587	45337.048	656873.835	394.896	148716.863	2186891.012	148716.863	2186891.012	1295.587
		Conversion Factor	3.2803337								

Topographic	HM-F	Fire Training		Elevation	NAD-83 Modern			NAD-27		
		North	East		North	East	Elevation	North	East	Elevation
Description	NAD-83 Feet	North	East	Elevation	North	East	Elevation	North	East	Elevation
NWCORPAD	150499.212	2150362.314		1246.117	45872.251	655431.737	379.817	150472.828	2181959.759	1246.117
BRASSTAG	150496.710	2150361.243		1246.334	45871.488	655431.410	379.883	150470.323	2181958.686	1246.334
MW2-64A	150498.592	2150361.920		1246.052	45871.452	655431.617	379.797	150470.205	2181959.365	1246.052
NWCORPAD	150496.378	2150370.497		1245.748	45871.387	655434.231	379.705	150469.991	2181967.941	1245.748
BRASSTAG	150494.048	2150369.768		1245.897	45870.677	655434.008	379.750	150467.662	2181967.209	1245.897
MW2-64B	150483.787	2150370.314		1245.596	45870.598	655434.175	379.855	150467.403	2181967.757	1245.596
NWCORPAD	150413.765	2150435.848		1243.361	45848.207	655454.150	378.977	150387.380	2182033.281	1243.361
BRASSTAG	150412.971	2150437.446		1243.561	45845.965	655454.637	379.038	150386.585	2182034.989	1243.561
MW2-63B	150412.498	2150437.914		1243.284	45845.821	655454.780	378.954	150386.113	2182035.358	1243.284
NWCORPAD	150417.479	2150443.373		1243.630	45847.339	655456.444	379.059	150391.093	2182040.817	1243.630
BRASSTAG	150416.999	2150445.608		1243.780	45847.192	655457.125	379.108	150390.611	2182043.052	1243.780
MW2-63A	150416.351	2150445.576		1243.387	45846.985	655457.115	378.985	150389.964	2182043.019	1243.387
NWCORPAD	150472.247	2150540.674		1246.052	45864.032	655486.101	379.797	150445.859	2182138.117	1246.052
BRASSTAG	150471.088	2150542.460		1246.286	45863.679	655486.845	379.863	150444.701	2182139.902	1246.266
MW2-62B	150470.906	2150543.115		1245.940	45863.623	655486.845	379.763	150444.517	2182140.558	1245.940
NWCORPAD	150475.671	2150562.586		1246.409	45865.078	655489.732	379.906	150449.284	2182150.03	1246.409
BRASSTAG	150474.251	2150554.084		1246.531	45864.643	655490.188	379.943	150447.863	2182151.526	1246.531
MW2-62A	150474.276	2150554.721		1246.213	45864.651	655490.383	379.846	150447.880	2182152.166	1246.213
NWCORPAD	150726.091	2150590.145		1251.120	45941.404	655501.180	381.342	150699.702	2182187.591	1251.120
BRASSTAG	150724.666	2150593.078		1251.270	45940.970	655502.074	381.388	150698.278	2182190.524	1251.270
MW2-65A	150724.671	2150592.440		1250.976	45940.971	655501.879	381.298	150698.281	2182189.894	1250.976
NWCORPAD	150740.546	2150583.419		1250.939	45945.910	655499.130	381.287	150714.157	2182180.865	1250.939
BRASSTAG	150739.181	2150585.126		1251.089	45945.394	655498.650	381.333	150712.792	2182182.571	1251.089
MW2-65B	150739.263	2150585.757		1250.812	45945.419	655499.842	381.248	150712.875	2182183.201	1250.812
Conversion				3.28083337						
Factor										

Description	NAD-83 Feet		Elevation	NAD-83 Meters		Easting	Elevation	NAD-27		Easting	Elevation
	Northing	Easting		Northing	Easting			Northing	Easting		
SB-018	147211.133	2150886.702	1268.631	44870.043	655.591.571	386.679		147184.752	2,182,484.119		1268.631
SB-017	147032.432	2150889.734	1270.361	44815.574	655.592.495	337.207		147006.049	2,182,487.149		1270.361
SB-016	146809.978	2150890.028	1273.764	44747.770	655.592.584	338.250		146783.596	2,182,487.440		1273.764
SB-015	146611.995	2150890.336	1275.957	44687.425	655.592.678	388.912		146585.615	2,182,487.746		1275.957
								NAD-27 Derived			
				Conversion Factor				Corpscon Prog			
				Meters X 3.28083337							

Coordinates in NAD 27 (Feet)			
SB-046	153257.757	2185233.520	1275.110
SB-044	153812.059	2185218.954	1275.980
SB-042	154123.573	2185217.978	1276.230
SB-043	154419.041	2185201.941	1275.830
SB-019	150737.212	2179625.925	1227.435
SB-020	150755.821	2179609.357	1226.202
SB-029	153285.911	2177284.758	1226.929
SB-030	153320.501	2177281.365	1225.960
SB-031	153338.949	2177281.766	1226.145
SB-032	153340.504	2177302.376	1226.026
SB-033	153343.640	2177322.855	1226.205
SB-034	153341.088	2177348.133	1225.884
NWCorPad	153301.164	2177258.344	1227.987
BrassTag	153299.307	2177259.879	1228.252
MW2-67A	153299.317	2177260.427	1227.680
NWCorPad	153308.454	2177257.848	1227.942
BrassTag	153306.246	2177260.227	1228.136
MW2-67B	153306.771	2177259.941	1227.749
SG-021	153287.920	2177258.977	1227.875
SG-027	153478.575	2177253.637	1227.450
NWCorPad	153458.818	2177266.025	1227.773
BrassTag	153456.321	2177268.214	1227.992
MW2-68A	153456.977	2177267.817	1227.639
NWCorPad	153471.990	2177265.458	1227.737
BrassTag	153471.006	2177267.377	1227.801
MW2-68B	153470.445	2177267.505	1227.501
SB-038	153486.704	2177283.644	1225.832
SB-041	153435.613	2177169.986	1228.184
SG-046	153377.514	2177145.766	1227.352
SG-043	153451.811	2177145.265	1227.388
SB-039	153410.174	2177198.420	1225.186
SB-040	153395.948	2177174.077	1225.367
SB-036	153493.958	2177306.573	1225.408
SB-037	153489.509	2177320.543	1225.822
SB-038	153489.394	2177346.511	1225.397
SG-030	153561.649	2177249.107	1228.246
SG-034	153535.004	2177378.089	1228.528
SG-036	153503.281	2177378.177	1228.755
NWCorPad	153477.479	2177489.938	1228.566
BrassTag	153475.180	2177492.330	1228.786
MW2-66B	153475.491	2177491.726	1228.424
NWCorPad	153486.331	2177490.122	1228.458
BrassTag	153485.081	2177491.772	1228.601
MW2-66A	153484.356	2177491.782	1228.208
NWCorPad	148749.069	2186879.522	1295.444
TopCap	148747.163	2186881.208	1298.011
MW2-69	148747.160	2186881.244	1297.780
NWCorPad	148654.478	2186731.015	1295.503
TopCap	148652.926	2186732.695	1297.910
MW2-61	148652.962	2186732.714	1297.869
SG-011	148658.094	2186678.134	1293.606
SG-007	148657.198	2186767.383	1294.398
SB-028	148682.056	2186750.834	1295.649
SB-026	148688.959	2186731.291	1295.280
SB-025	148718.136	2186723.049	1295.337
SB-024	148744.402	2186718.650	1295.452
SB-023	148747.128	2186749.887	1295.640
SG-003	148765.875	2186766.271	1295.340
SB-021	148763.832	2186704.005	1295.427
SB-022	148740.941	2186693.033	1295.804
SB-027	148681.693	2186692.623	1295.822
NWCorPad	148718.373	2186690.271	1295.791
BrassTag	148717.506	2186691.074	1295.890
MW2-60	148716.863	2186691.012	1295.587
SB-014	146418.665	2185980.834	1311.061
SB-013	146386.651	2185952.828	1310.171
SB-011	146421.474	2185927.396	1310.433
SB-012	146439.390	2185919.358	1310.473
SB-010	146515.850	2185941.209	1311.318
NWCorSite	146694.980	2185919.921	1309.813
SWCorSite	146424.969	2185785.474	1308.511
SECorSite	146279.439	2186076.341	1308.422
NECorSite	146546.781	2186209.268	1306.203
NWCorPad	150472.826	2181959.759	1246.117

Brasstag	150470.323	2181958.688	1246.334
MW2-64A	150470.205	2181959.385	1246.052
NWCORPAD	150469.991	2181967.941	1245.748
Brasstag	150467.662	2181967.209	1245.897
MW2-64B	150467.403	2181967.757	1245.586
NWCORPAD	150387.380	2182033.291	1243.361
BRASSTAG	150386.585	2182034.889	1243.561
MW2-63B	150386.113	2182035.358	1243.284
NWCORPAD	150391.093	2182040.817	1243.630
BRASSTAG	150390.611	2182043.052	1243.790
MW2-63A	150389.964	2182043.019	1243.387
NWCORPAD	150445.859	2182138.117	1246.052
BRASSTAG	150444.701	2182139.902	1246.266
MW2-62B	150444.517	2182140.558	1245.940
NWCORPAD	150449.284	2182150.03	1246.409
BRASSTAG	150447.883	2182151.526	1246.531
MW2-62A	150447.890	2182152.166	1246.213
NWCORPAD	150699.702	2182187.591	1251.120
BRASSTAG	150698.278	2182190.524	1251.270
MW2-65A	150698.281	2182189.884	1250.976
NWCORPAD	150714.157	2182180.865	1250.939
BRASSTAG	150712.792	2182182.571	1251.089
MW2-65B	150712.875	2182183.201	1250.812
SB-018	147184.752	2182484.119	1288.631
SB-017	147006.049	2182487.149	1270.361
SB-016	146783.596	2182487.440	1273.784
SB-015	146585.615	2182487.746	1275.957

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Coordinates in NAD 83 (Meters)			
48721.114	656429.578	388.654	SB-045
48880.086	656425.137	388.919	SB-044
48985.016	656424.839	388.996	SB-042
47075.075	656419.950	388.874	SB-043
45982.828	654720.380	374.123	SB-019
45958.500	654715.330	373.747	SB-020
46729.667	654006.782	373.969	SB-029
46740.210	654005.748	373.673	SB-030
46745.833	654005.870	373.730	SB-031
46746.307	654012.152	373.693	SB-032
46747.263	654018.394	373.748	SB-033
46748.485	654026.099	373.650	SB-034
46734.318	653998.731	374.291	NWCorPad
46733.780	653999.199	374.372	BrassTag
46733.753	653999.366	374.259	MW2-67A
46736.638	653998.580	374.277	NWCorPad
46735.865	653999.305	374.337	BrassTag
46736.025	653999.218	374.219	MW2-67B
46724.183	653998.924	374.257	SG-021
46788.391	653997.296	374.128	SG-027
46782.389	654001.072	374.226	NWCorPad
46781.608	654001.739	374.293	BrassTag
46781.808	654001.618	374.185	MW2-68A
46786.384	654000.899	374.215	NWCorPad
46786.084	654001.484	374.234	BrassTag
46788.913	654001.523	374.143	MW2-68B
46790.869	654006.442	373.634	SB-035
46775.296	653971.789	373.742	SB-041
46767.687	653984.417	374.098	SG-045
46780.233	653984.264	374.109	SG-043
46767.542	653980.466	373.437	SB-039
46763.206	653973.046	373.493	SB-040
46793.080	654013.431	373.505	SB-036
46791.724	654017.689	373.631	SB-037
46791.889	654025.604	373.502	SB-038
46813.712	653995.915	374.370	SG-030
46805.591	654035.229	374.456	SG-034
46795.922	654035.256	374.525	SG-035
46788.058	654089.321	374.468	NWCorPad
46787.367	654070.050	374.535	BrassTag
46787.452	654069.868	374.424	MW2-66B
46790.786	654069.377	374.435	NWCorPad
46790.376	654069.880	374.478	BrassTag
46790.164	654069.883	374.359	MW2-66A
46346.865	656931.293	394.852	NWCorPad
46346.284	656931.807	395.635	TopCap
46346.243	656931.818	395.684	MW2-59
46318.033	656886.028	394.870	NWCorPad
46317.580	656886.540	395.604	TopCap
46317.571	656886.548	395.530	MW2-61
46319.135	656889.910	394.292	SG-011
46318.862	656897.113	394.533	SG-007
46328.439	656892.069	394.915	SB-028
46328.543	656886.112	394.802	SB-026
46337.436	656883.800	394.820	SB-025
46345.442	656882.259	394.855	SB-024
46346.273	656891.780	394.912	SB-023
46381.987	656896.774	394.820	SG-003
46351.364	656877.795	394.847	SB-021
46344.387	656874.451	394.962	SB-022
46328.328	656874.326	394.967	SB-027
46337.808	656873.609	394.958	NWCorPad
46337.244	656873.854	394.988	BrassTag
46337.048	656873.835	394.896	MW2-60
44838.551	656857.377	399.812	SB-014
44826.793	656848.841	399.341	SB-013
44837.407	656641.089	399.421	SB-011
44642.868	656838.639	399.433	SB-012
44698.173	656845.299	399.691	SB-010
44720.772	656838.810	399.232	NWCorSite
44639.472	656597.831	398.835	SWCorSite
44694.115	656886.488	398.808	SECorSite
44676.802	656727.004	398.131	NECorSite
45872.251	655431.737	379.817	NWCorPad

45871.488	655431.410	379.883	Brasstag
45871.452	655431.617	379.797	MW2-64A
45871.387	655434.231	379.705	NWCORPAD
45870.877	655434.008	379.750	Brasstag
45870.598	655434.175	379.655	MW2-64B
45846.207	655454.150	378.977	NWCORPAD
45845.965	655454.637	379.038	BRASSTAG
45845.821	655454.780	378.954	MW2-63B
45847.339	655458.444	379.059	NWCORPAD
45847.192	655457.125	379.108	BRASSTAG
45846.995	655457.115	378.985	MW2-63A
45884.032	655488.101	379.797	NWCORPAD
45883.879	655488.645	379.883	BRASSTAG
45883.623	655488.845	379.763	MW2-62B
45885.076	655489.732	379.906	NWCORPAD
45884.843	655490.188	379.943	BRASSTAG
45884.651	655490.383	379.846	MW2-62A
45941.404	655501.180	381.342	NWCORPAD
45940.970	655502.074	381.388	BRASSTAG
45940.971	655501.879	381.298	MW2-65A
45945.810	655499.130	381.287	NWCORPAD
45945.394	655499.650	381.333	BRASSTAG
45945.419	655499.842	381.248	MW2-65B
44870.043	655591.571	388.679	SB-018
44816.674	655592.495	387.207	SB-017
44747.770	655592.584	388.250	SB-016
44687.425	655592.678	388.912	SB-015

NAD-83

END

Final Report
Phase I RCRA Facility Investigation
for Appendix I Sites

VOLUME VI

AOC, Old Pesticide Storage Area



Department of the Air Force
Oklahoma City Air Logistics Center
Tinker Air Force Base, Oklahoma

September 1994

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List of Acronyms

AFB	Air Force Base
AOC	area of concern
CAL	corrective action level
CDM	CDM Federal Programs Corporation
CEC	cation exchange capacity
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cm/sec	centimeters per second
CMS	Corrective Measures Study
DCE	dichloroethene
DCQAP	Data Collection Quality Assurance Plan
DERP	Defense Environmental Restoration Program
DOD	U.S. Department of Defense
DQO	Data Quality Objective
DWS	drinking water standards
EID	Engineering Installation Division
EPA	U.S. Environmental Protection Agency
ES	Engineering Science
FID	flame ionization detector
ft/ft	foot per foot
GC/MS	gas chromatography/mass spectrometry
HSWA	Hazardous and Solid Waste Amendments
IRP	Installation Restoration Program
LSZ	lower saturated zone
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MS	matrix spike
MSD	matrix spike duplicate
msl	mean sea level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List

List of Acronyms *(Continued)*

OPSA	Old Pesticide Storage Area
PA/SI	preliminary assessment/site investigation
PID	photoionization detector
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI/FS	remedial investigation/feasibility study
RME	reasonable maximum exposure
ROD	record of decision
RPD	relative percent difference
SARA	Superfund Amendments and Reauthorization Act
SDB	Sludge Drying Beds
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TCE	trichloroethene
TSD	treatment, storage, and disposal (facility)
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
USZ	upper saturated zone
UWBZ	upper water bearing zone
VOA	volatile organic analysis
VOC	volatile organic compounds

Executive Summary

This report provides a summary of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) conducted at area of concern (AOC), Old Pesticide Storage Area (OPSA), Tinker Air Force Base (AFB), Oklahoma. The report has been prepared to determine whether hazardous constituents as defined by federal regulations have been released into the environment from the OPSA. The RFI for this unit has been conducted in accordance with the Work Plan prepared by CDM Federal Programs Corporation (CDM) (1992). This RFI Report presents the following information:

- Site characterization (Environmental Setting)
- Source term definition (Source Characterization), if any
- Degree of contamination (Contamination Characterization)
- Identification of actual or potential receptors
- Analytical results and analysis (Data Analysis)
- Identification of groundwater protection standards and action levels for the protection of human health and the environment (Protection Standards)
- Conclusions and recommendations for future work.

Tinker AFB is located in central Oklahoma, in the southeast portion of the Oklahoma City metropolitan area, in Oklahoma County. The Base is bounded by Sooner Road to the west, Douglas Boulevard to the east, Interstate 40 to the north, and Southeast 74th Street to the south. The Base encompasses approximately 5,000 acres.

Background. Tinker AFB began operations in 1942 and serves as a worldwide repair depot for a variety of aircraft, weapons, and engines. These activities require the use of hazardous materials and result in the generation of hazardous wastes. These wastes have included spent organic solvents, waste oils, waste paint strippers and sludges, electroplating wastewaters and sludges, alkaline cleaners, acids, FreonTM, jet fuels, and radium paints.

In 1984, Congress amended the RCRA with the Hazardous and Solid Waste Amendments (HSWA), which allow U.S. Environmental Protection Agency (EPA) to require, as a permit condition, a facility to undertake corrective action for any release of hazardous waste or

constituents from any solid waste management unit (SWMU) at a treatment, storage, and disposal (TSD) facility. On January 12, 1989, Tinker AFB submitted its Part B permit application for renewal of its operating RCRA Hazardous Waste Storage facility permit. The final RCRA HSWA permit issued on July 1, 1991, requires Tinker AFB to investigate all SWMUs and AOCs and to perform corrective action at those identified as posing a threat to human health or the environment. The permit specifies that an RFI be conducted for 43 identified SWMUs and two AOCs on the Base. This document has been prepared to determine whether sufficient investigations have been conducted to meet the permit requirements for the OPSA. Interviews with OPSA personnel at Tinker AFB indicated that no releases occurred.

Source Description. OPSA is located at Building 1005, which is on the west side of the Base just west of Air Depot Boulevard. Building 1005 was constructed as part of a sanitary waste treatment plant that was operational from the early 1950s until 1971. The building reportedly was used to store and mix pesticides, however, the exact dates of these operations are not known. The sanitary waste treatment plant also includes eight sludge drying beds (SDB) that were recently used as a 90-day storage site for hazardous waste drum accumulation. SWMU-14, (SDB) is simultaneously being investigated under this RFI (Volume II).

A source characterization investigation was not conducted or required at this site because the practice of storing and mixing pesticides has been stopped and there are no source materials at the site.

Site Investigations. During the RFI performed at OPSA, a total of 13 soil samples were collected from the three soil borings performed at this AOC for chemical analysis. The analysis included volatile and semivolatile organic compounds, metals (aluminum, silver, arsenic, barium, beryllium, cadmium, chromium, chromium VI, copper, iron, lead, mercury, nickel, and zinc) and organic analyses included volatile and semivolatile compounds. A soil gas survey was performed at OPSA consisting of three vapor gas survey points situated west of the site. The only compound detected during the soil gas survey was 1,1-dichloroethene (DCE), which was reported in SG-045 at 5.9 micrograms per liter ($\mu\text{g/L}$). The analytical results from the soil gas survey are qualitative only and do not have a direct correlation with VOC-impacted soil. The three soil borings did not confirm the presence of DCE in the soils at the OPSA site.

Soil analyses for metals from the borings indicated no analities at or above SWMU corrective action level (CAL).

During the RFI at OPSA no groundwater samples were collected, thus no information regarding groundwater quality is available from this investigation. The three soil borings drilled at this AOC were advanced down to the top of the first water encountered. The depth to water in the borings as documented by the site geologist from boring logs ranged from 13.7 feet below ground surface (bgs) to 15.9 feet bgs.

Conclusions. The Phase I RFI conducted at this AOC indicated that the soil samples collected from the three soil borings drilled resulted in concentrations of metals below SWMU CALs. The analytical results indicate that no impacts to the environment are present at the OPSA. Groundwater was not sampled during the investigation, thus no information regarding groundwater quality was available for the site.

Recommendations for Additional Work. Based on evaluations of available data, there is no evidence of contamination at the OPSA; therefore, no corrective measures are presently recommended. Because no groundwater data have been collected from this site, it is reommended that before the OPSA is closed as an AOC, groundwater data should be collected to support conclusions or recommendations made for site closure. During the Phase II RFI, downgradient monitoring wells should be installed to monitor the shallow Hennessey groundwater in the immediate vicinity of the OPSA.

Site-specific soil background samples were not collected, nor were the soil background values available for inclusion in this Phase I RFI report. Therefore, it is recommended that site-specific soil samples from uncontaminated areas be collected for analysis during the Phase II RFI field work. This additional information along with the USGS background values should be used in the Phase II report to distinguish site-related from background concentrations in a statistically significant manner.

1.0 Introduction

The U.S. Department of the Air Force is conducting an Installation Restoration Program (IRP) at Tinker Air Force Base (AFB), Oklahoma (Figure 1-1). This program intends to identify sites through initial assessments, characterize each solid waste management unit (SWMU) or area of concern (AOC), study and select cleanup methods, if required, and implement a cleanup. In support of this effort, a Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was conducted at the AOC, Old Pesticide Storage Area (OPSA), at Tinker AFB, Oklahoma (Figure 1-2). This Phase I investigation focuses its efforts on determining if there have been any releases of contamination to the soil resulting from storing and mixing of pesticide materials within the confines of the OPSA.

Adequate information must be gathered in a Phase I RFI to support no further action, Phase II investigation, a Corrective Measures Study (CMS), or interim measures, as necessary. A phased approach has been taken by Tinker AFB for the OPSA site investigation. This phasing of the RFI is in accordance with U.S. Environmental Protection Agency (EPA) RFI guidance documents and is also the most practical approach for this site where little or no information is available on past practices.

Outlined below are the minimum tasks generally required by the EPA for a RCRA investigation of a SWMU or AOC:

- Task I - Description of Current Conditions
- Task II - Work Plan
- Task III - Facility Investigation
- Task IV - Investigative Analysis
- Task V - Report.

The Task I requirements for the OPSA have been addressed in the *Description of Current Conditions* (Tinker, 1992), which outlines the geology, hydrogeology, and current conditions of the site. Task II requirements have been addressed in the *Final RFI Work Plan* (CDM Federal Programs Corporation [CDM], 1992), and the *Final RFI Work Plan - Amendments* (IT Corporation [IT], 1993a). The *Final RFI Work Plan* and the *Final RFI Work Plan - Amendments* include a Data Management Plan, Project Management Plan, Data Collection Quality Assurance Plan, Health and Safety Plan, and amendments as necessary to perform a

STARTING DATE: 03/17/94	DATE LAST REV.:	DRAFT. CHCK. BY: G. PACHECO	INITIATOR: C. WALLACE	DWG. NO.:
DRAWN BY: P.O. TERRY	DRAWN BY:	ENGR. CHCK. BY: C. WALLACE	PROJ. MGR. J. TAYLOR	PROJ. NO.:

3/23/94 POT
 FILENAME: G:\TINKER\40983202.075



OKLAHOMA

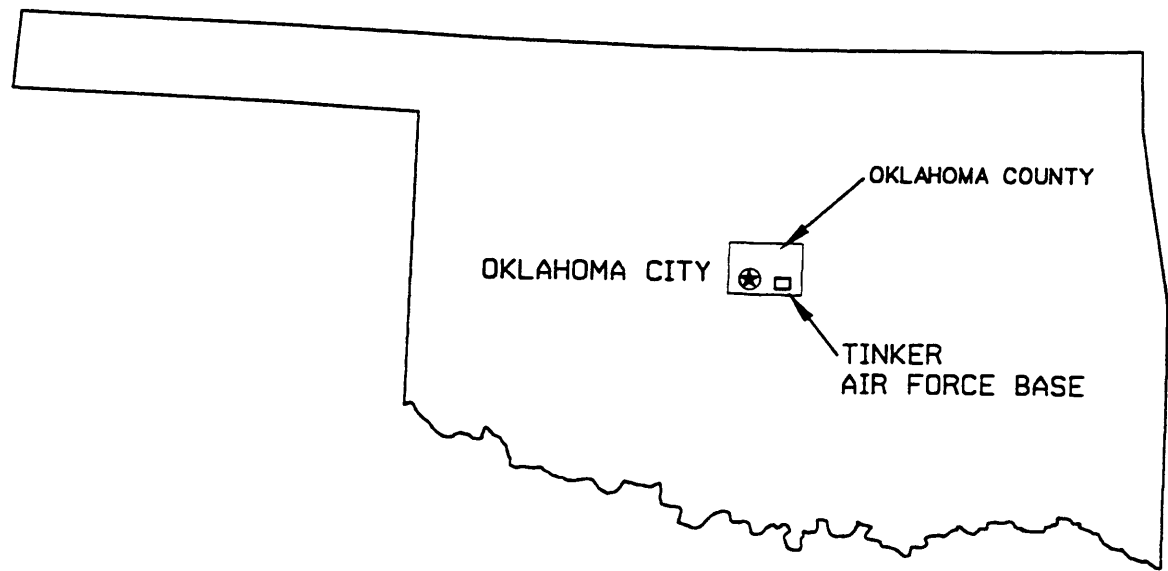
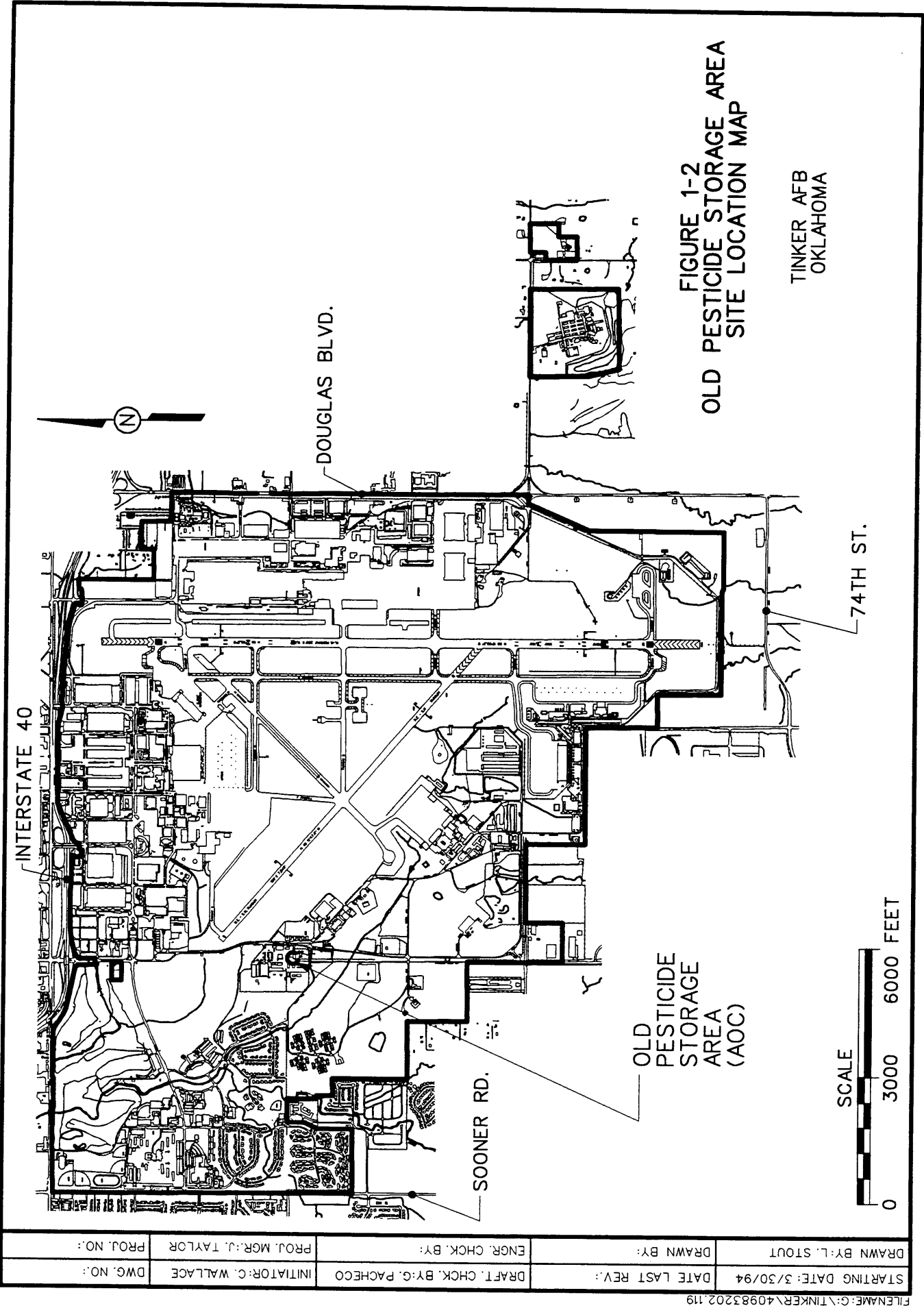


FIGURE 1-1
 TINKER AIR FORCE BASE
 OKLAHOMA
 STATE INDEX MAP

PREPARED FOR
 TINKER AFB
 OKLAHOMA



Phase I RFI. Tasks III and IV requirements, which characterize the site, determine the presence of contamination, and identify actual and potential receptors, have been addressed in this report. This report also satisfies the requirements of Task V.

1.1 Purpose

This report has been prepared in response to the U.S. Department of the Air Force, Tinker AFB, Oklahoma request for a Phase I RFI and report for the OPSA.

The purpose of this report is to document and present the findings of the RFI conducted at the OPSA. The primary objective of the RFI was to determine if contaminant releases to the environment have occurred at the site and to determine if a more comprehensive Phase II RFI or a CMS is required. This RFI Report presents the following information:

- Site characterization (Environmental Setting)
- Source term definition (Source Characterization), if any
- Degree of contamination (Contamination Characterization)
- Identification of actual or potential receptors
- Analytical results and analysis (Data Analysis)
- Identification of groundwater protection standards and action levels for the protection of human health and the environment (Protection Standards)
- Conclusions and recommendations for future work.

This document will also describe the procedures and methods of field sampling and cite any previous investigations conducted at the site.

1.2 Scope of Investigation

Soil samples were taken at various depths at the OPSA to determine the presence of subsurface soil contamination. A soil gas survey was also conducted around the OPSA to determine the presence, if any, of volatile organic compounds (VOC) in the surrounding subsurface soils.

2.0 Background

2.1 Tinker AFB Facility Description and History

Tinker AFB is located in central Oklahoma, in the southeast portion of the Oklahoma City metropolitan area, in Oklahoma County (Figure 1-1) with its approximate geographic center located at 35° 25' latitude and 97° 24' longitude (U.S. Geological Survey [USGS], 1978). The Base is bounded by Sooner Road to the west, Douglas Boulevard to the east, Interstate 40 to the north, and Southeast 74th Street to the south. An additional area east of the main Base is used by the Engineering Installation Division (EID) and is known as Area D. The Base encompasses approximately 5,000 acres.

Tinker AFB was originally known as the Midwest Air Depot and began operations in July 1941. The site was activated March 1942 and during World War II the depot was responsible for reconditioning, modifying, and modernizing aircraft, vehicles, and equipment. Tinker AFB now serves as a worldwide repair depot for a variety of aircraft, weapons, and engines. These activities require the use of hazardous materials and result in the generation of hazardous wastes. These wastes have included spent organic solvents, waste oils, waste paint strippers and sludges, electroplating wastewaters and sludges, alkaline cleaners, acids, FreonTM, jet fuels, and radium paints. Wastes that are currently generated are managed at two permitted hazardous waste storage facilities. Prior to enactment of RCRA, however, industrial wastes were discharged into unlined landfills and waste pits, streams, sewers, and ponds. Releases from these areas as well as from underground tanks have occurred. As a result, there are numerous sites of soil, groundwater, and surface water contamination on the Base.

2.2 Site Description and History

The OPSA is located at Building 1005, which is on the west side of the Base just west of Air Depot Boulevard. Building 1005 was constructed as part of a sanitary waste treatment plant, which was operational from the early 1950s until 1971. The building reportedly was used to store and mix pesticides, however, the exact dates of these operations are not known. The sanitary waste treatment plant also includes eight sludge drying beds (SDB) that were recently used as a 90-day storage site for hazardous waste drum accumulation. SWMU-14, SDB is simultaneously being investigated under this RFI (Volume II).

Building 1005 is constructed of poured in place concrete floors (basement and main floor), basement walls, and roof. The walls on the main floor are constructed of concrete masonry

units. The floors and walls are in good condition. The approximate dimensions of the building are 20 feet wide by 30 feet long. There are two entrances to the building on the main level, a 6-foot wide double door (two 3-foot doors) is located on the front of the building and one 3-foot door is located on the back side of the building. The basement door and stair dimensions make the basement nonaccessible to boring equipment. The basement's floor could have acted as a secondary containment should a pesticide spill have occurred.

Discussions with Base personnel involved with the OPSA during its operation have indicated that there were no releases and that pesticides were stored on the main level. Base personnel also stated that some mixing of pesticides occurred outdoors between Buildings 1005 and 1007. Both of these buildings are slightly elevated with a paved area between the buildings. Observation and inspection of buildings revealed no pesticide containers, appearances, or spills.

2.3 Regulatory History and Status

In 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to address the cleanup of hazardous waste disposal sites across the country. CERCLA gave the president authority to require responsible parties to remediate the sites or to undertake response actions through use of a fund (the Superfund). The president, through Executive Order 12580, delegated the EPA with the responsibility to investigate and remediate private party hazardous waste disposal sites that created a threat to human health and the environment. The president delegated responsibility for investigation and clean up of federal facility disposal sites to the various federal agency heads. The Defense Environmental Restoration Program (DERP) was formally established by Congress in Title 10 U.S. Code (USC) 2701-2707 and 2810. DERP provides centralized management for the cleanup of U.S. Department of Defense (DOD) hazardous waste sites consistent with the provisions of CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] 300), and Executive Order 12580. To support the goals of the DERP, the IRP was developed to identify, investigate, and clean up contamination at installations.

Under the Air Force IRP, Tinker AFB began a Phase I study similar to a preliminary assessment/site investigation (PA/SI) in 1981 (Engineering Science [ES], 1982). This study helped locate 14 sites that needed further investigation. Phase II studies were performed in 1983 (Radian Corporation [Radian], 1985a,b).

In 1986, Congress amended CERCLA through the SARA, which waived sovereign immunity for federal facilities. SARA gave EPA authority to oversee the cleanup of federal facilities and to have the final authority for selecting the remedial action at federal facilities placed on the National Priorities List (NPL) if the EPA and the relevant federal agency cannot concur in the selection. Congress also codified the DERP (SARA Section 211), setting up a fund for the DOD to remediate its sites because the Superfund is not available for the cleanup of federal facilities. DERP specifies the type of clean up responses that the fund can be used to address.

In response to SARA, the DOD realigned its IRP to follow the investigation and clean up stages of the EPA:

- PA/SI
- Remedial investigation/feasibility study (RI/FS)
- Record of Decision (ROD) for selection of a remedial action
- Remedial design/remedial action.

In 1984, Congress amended the RCRA with the Hazardous and Solid Waste Amendments (HSWA) which allow the EPA to require, as a permit condition, a facility to undertake corrective action for any release of hazardous waste or constituents from any SWMU at a treatment, storage, and disposal (TSD) facility. On January 12, 1989 Tinker AFB submitted its Part B permit application for renewal of its operating RCRA hazardous waste storage facility permit.

EPA, in the Hazardous Waste Management Permit for Tinker AFB dated July 1, 1991, identified 43 SWMUs and two AOCs on Tinker AFB that need to be addressed. This permit requires Tinker AFB to investigate all SWMUs and AOCs and to perform corrective action at those identified as posing a threat to human health or the environment. This RFI Report has been prepared to determine whether sufficient investigations have been conducted to meet the permit requirements for AOC and to document all findings.

2.4 Summary of Previous Investigations

The OPSA was recently added to the IRP, and no previous investigations were conducted at the site. Previous investigations have been conducted at the adjacent SDB and this investigation continues during this RFI (Volume II). Water Supply Well No. 6 is located 300 feet north of Building 1005 and draws water from a depth of approximately 250 feet. No pesticides have been reported in any of the samples routinely collected from this well.

Crutcho Creek lies approximately 1,500 feet to the south of Building 1005. No Base employees currently work at this site.

3.0 Environmental Setting

3.1 Topography and Drainage

3.1.1 Topography

Regional/Tinker AFB. The topography of Oklahoma City and surrounding area varies from generally level to gently rolling in appearance. Local relief is primarily the result of dissection by erosional activity or stream channel development. At Oklahoma City, surface elevations are typically in the range of 1,070 to 1,400 feet mean sea level (msl). At Tinker AFB ground surface elevations vary from 1,190 feet msl near the northwest corner where Crutcho Creek intersects the Base boundary to approximately 1,320 feet msl at Area D (EID), located on 59th Street, east of the main installation.

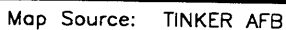
Site. The OPSA is located on the midwest side of Tinker AFB. From the geologic cross-sections, the general surface elevation of the OPSA is reported to be 1,226 feet msl. A site map showing the surface elevation is included as Figure 3-1.

3.1.2 Drainage

Regional/Tinker AFB. Drainage of Tinker AFB land areas is accomplished by overland flow of runoff to diversion structures and then to area surface streams, which flow intermittently. The northeast portion of the Base is drained primarily by tributaries of Soldier Creek, which is itself a tributary of Crutcho Creek. The north and west sections of the Base, including the main instrument runway, drain to Crutcho Creek, a tributary of the North Canadian River. Two small unnamed intermittent streams crossing installation boundaries south of the main instrument runway generally do not receive significant quantities of Base runoff due to site grading designed to preclude such drainage. These streams, when flowing, extend to Stanley Draper Lake, approximately one-half mile south of the Base.

Site. Surface water runoff at the OPSA discharges to Crutcho Creek, which runs to the southwest of OPSA.

Do Not Scale This Drawing



A horizontal scale bar with alternating black and white segments. The left end is labeled '0' and the right end is labeled '50'. Below the bar, the word 'FEET' is centered.

- LEGEND

FIGURE 3-1
TOPOGRAPHIC MAP OF
OLD PESTICIDE STORAGE AREA
WITH LOCATIONS OF
SOIL BORINGS AND
SOIL VAPOR SURVEY POINTS

PREPARED FOR
TINKER AFB
OKLAHOMA

3.2 Geology

3.2.1 Regional/Tinker AFB Geology

Tinker AFB is located within the Central Redbed Plain Section of the Central Lowland Physiographic Province, which is tectonically stable. No major fault or fracture zones have been mapped near Tinker AFB. The major lithologic units in the area of the Base are relatively flat-lying and have a regional westward dip of about 0.0076 foot per foot (ft/ft) (Bingham and Moore, 1975).

Geologic formations that underlie Tinker AFB include, from oldest to youngest, the Wellington Formation, Garber Sandstone, and the Hennessey Group; all are Permian in age. All geologic units immediately underlying Tinker AFB are sedimentary in origin. The Garber Sandstone and Wellington Formation are commonly referred to as the Garber-Wellington Formation due to strong lithologic similarities. These formations are characterized by fine-grained, calcareously-cemented sandstones interbedded with shale. The Hennessey Group consists of the Fairmont Shale and the Kingman Siltstone. It overlies the Garber-Wellington Formation along the eastern portion of Cleveland and Oklahoma counties. Quaternary alluvium is found in many undisturbed streambeds and channels located within the area.

Stratigraphy. Tinker AFB lies atop a sedimentary rock column composed of strata that ranges in age from Cambrian to Permian above a Precambrian igneous basement. Quaternary alluvium and terrace deposits can be found overlying bedrock in and near present-day stream valleys. At Tinker AFB, Quaternary deposits consist of unconsolidated weathered bedrock, fill material, windblown sand, and interfingering lenses of sand, silt, clay, and gravel of fluvial origin. The terrace deposits are exposed where stream valleys have downcut through older strata and have left them topographically above present-day deposits. Alluvial sediments range in thickness from less than a foot to nearly 20 feet.

Subsurface (bedrock) geologic units that outcrop at Tinker AFB and are important to understanding groundwater and contaminant concerns at the Base consist of, in descending order: the Hennessey Group, the Garber Sandstone, and the Wellington Formation (Table 3-1). These bedrock units were deposited during the Permian age (230 to 280 million years ago) and are typical of redbed deposits formed during that period. The units are composed of a conformable sequence of sandstones, siltstones, and shales. Individual beds are lenticular and vary in thickness over short horizontal distances. Because lithologies are similar and because of a lack of fossils or key beds, the Garber Sandstone and the Wellington Formation

Table 3-1

**Major Geologic Units In the Vicinity of Tinker AFB
(Modified from Wood and Burton, 1968)**

(Page 1 of 2)

System	Series	Stratigraphic Unit	Thickness (feet)	Description and Distribution	Water-Bearing Properties
Q U A T E R N A R Y	P L E I S T O C E N E	Alluvium	0-70	Unconsolidated and interfingering lenses of sand, silt, clay, and gravel in the flood plains and channels of stream	Moderately permeable. Yields small to moderate quantities of water in valleys of larger streams. Water is very hard, but suitable for most uses, unless contaminated by industrial wastes or oil field brines.
	A N D R E C E N T	Terrace deposits	0-100	Unconsolidated and interfingering lenses of sand, silt, gravel, and clay that occur at one or more levels above the flood plains of the principal streams.	Moderately permeable. Locally above the water table and not saturated. Where deposits have sufficient saturated thickness, they are capable of yielding moderate quantities of water to wells. Water is moderately hard to very hard, but less mineralized than water in other aquifers. Suitable for most uses unless contaminated by oil field brines.

Table 3-1

(Page 2 of 2)

System	Series	Stratigraphic Unit	Thickness (feet)	Description and Distribution	Water-Bearing Properties
P E R M I A N	L O W E R	Hennessey Group (includes Kingman Siltstone and Fairmont Shale)	700	Deep-red clay shale containing thin beds of red sandstone and white or greenish bands of sandy or limey shale. Forms relatively flat to gently rolling grass-covered prairie.	Poorly permeable. Yields meager quantities or very hard, moderately to highly mineralized water to shallow domestic and stock wells. In places water contains large amounts of sulfate.
	P E R M	Garber Sandstone	500±	Deep-red clay to reddish-orange, massive and cross-bedded fine-grained sandstone interbedded and interfingering with red shale and siltstone	Poorly to moderately permeable. Important source of groundwater in Cleveland and Oklahoma counties. Yields small to moderate quantities of water to deep wells; heavily pumped for industrial and municipal uses in the Norman and Midwest City areas. Water from shallow wells hard to very hard; water from deep wells moderately hard to soft. Lower part contains water too salty for domestic and most industrial uses.
	I A N	Wellington Formation	500±	Deep-red to reddish-orange massive and cross-bedded fine-grained sandstone interbedded with red, purple, maroon, and gray shale. Base of formation not exposed in the area.	

are difficult to distinguish and are often informally lumped together as the Garber-Wellington Formation. Together, these units are about 900 feet thick at Tinker AFB. The interconnected, lenticular nature of sandstones within the sequence forms complex pathways for groundwater movement.

The surficial geology of the north section of the Base is dominated by the Garber Sandstone, which outcrops across a broad area of Oklahoma County. Generally, the Garber outcrop is covered by a veneer of soil and/or alluvium up to 20 feet thick. To the south, the Garber Sandstone is overlain by outcropping strata of the Hennessey Group, including the Kingman Siltstone and the Fairmont Shale (Bingham and Moore, 1975). Drilling information obtained as a result of geotechnical investigations and monitoring well installation confirms the presence of these units.

Depositional Environment. The Permian-age strata presently exposed at the surface in central Oklahoma were deposited along a low-lying north-south oriented coastline. Land features included meandering to braided sediment-loaded streams that flowed generally westward from highlands to the east (ancestral Ozarks). Sand dunes were common, as were cut-off stream segments that rapidly evaporated. The climate was arid and vegetation sparse. Offshore the sea was shallow and deepened very gradually to the west. The shoreline's position varied over a wide range. Isolated evaporitic basins frequently formed as the shoreline shifted.

Across Oklahoma, this depositional environment resulted in an interfingering collage of fluvial and windblown sands, clays, shallow marine shales, and evaporite deposits. The overloaded streams and evaporitic basins acted as sumps for heavy metals such as barium, chromium, iron, and lead. Oxidation of iron in the arid climate resulted in the reddish color of many of the sediments. Erosion and chemical breakdown of granitic rocks from the highlands results in extensive clay deposits. Evaporite minerals such as anhydrite (CaSO_4), barite (BaSO_4), and gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) are common.

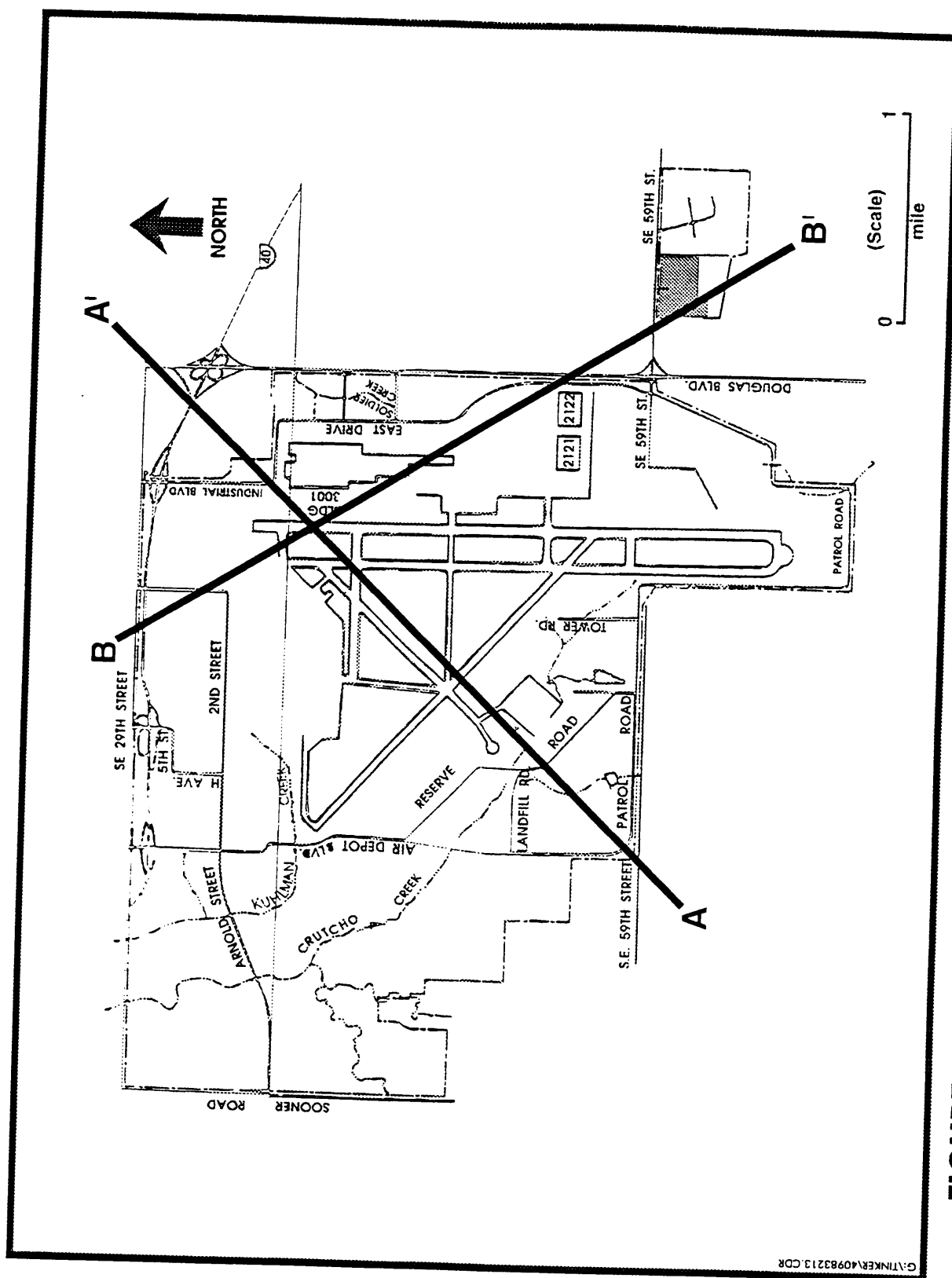
Around Tinker AFB, the Hennessey Group represents deposition in a tidal flat environment cut by shallow, narrow channels. The Hennessey Group comprises predominantly red shales, which contain thin beds of sandstone (less than 10 feet thick) and siltstone. In outcrop, "mudball" conglomerates, burrow surfaces, and desiccation cracks are recognized. These units outcrop over roughly the southern half of the Base, thickening to approximately 70 feet

in the southwest from their erosional edge (zero thickness) across the central part of Tinker AFB.

In contrast, the Garber Sandstone and Wellington Formation around Tinker AFB consist of an irregularly interbedded system of lenticular sandstones, siltstones, and shales deposited either in meandering streams in the upper reaches of a delta or in a braided stream environment. Outcrop units north of Tinker AFB exhibit many small to medium channels with cut and fill geometries consistent with a stream setting. Sandstones are typically cross-bedded. Individual beds range in thickness from a few inches to approximately 50 feet and appear massive, but thicker units are often formed from a series of "stacked" thinner beds. Geophysical and lithologic well logs indicate that from 65 to 75 percent of the Garber Sandstone and the Wellington Formation are composed of sandstone at Tinker AFB. The percentage of sandstone in the section decreases to the north, south, and west of the Base. These sandstones are typically fine to very fine grained, friable, and poorly cemented. However, where sandstone is cemented by red muds or by secondary carbonate or iron cements, local thin "hard" intervals exist along disconformities at the Base of sandstone beds. Shales are described as ranging from clayey to sandy, are generally discontinuous, and range in thickness from a few inches to about 40 feet.

Stratigraphic Correlation. Correlation of geologic units is difficult due to the discontinuous nature of the sandstone and shale beds. However, cross-sections (Figure 3-2) demonstrate that two stratigraphic intervals can be correlated over most of the Base in the conceptual model. These intervals are represented on geologic cross-sections A-A' and B-B' and in the Figures 3-3 and 3-4. Section A-A' is roughly a dip section and B-B' is approximately a strike section. The first correlatable interval is marked by the Base of the Hennessey Group and the first sandstone at the top of the Garber Sandstone. This interval is mappable over the southern half of Tinker AFB. The second interval consists of a shale zone within the Garber Sandstone, which, in places, comprises a single shale layer and in other places multiple shale layers. This interval is more continuous than other shale intervals and in cross sections appears mappable over a large part of the Base. It is extrapolated under the central portion of Tinker AFB where little well control exists.

Structure. Tinker AFB lies within a tectonically stable area; no major near-surface faults or fracture zones have been mapped near the Base. Most of the consolidated rock units of the



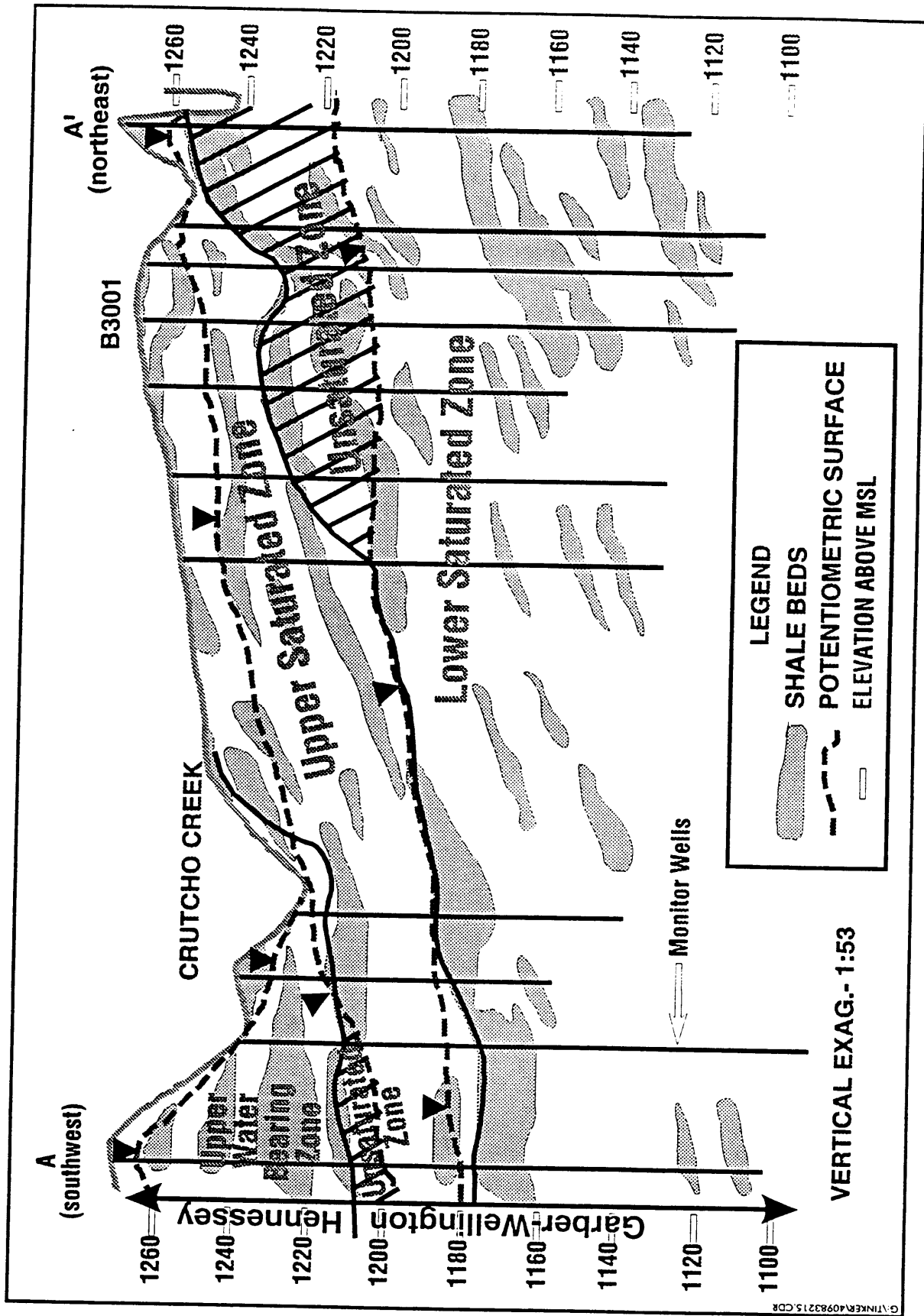


FIGURE 3-3 TINKER AFB GEOLOGIC CROSS SECTION A-A'

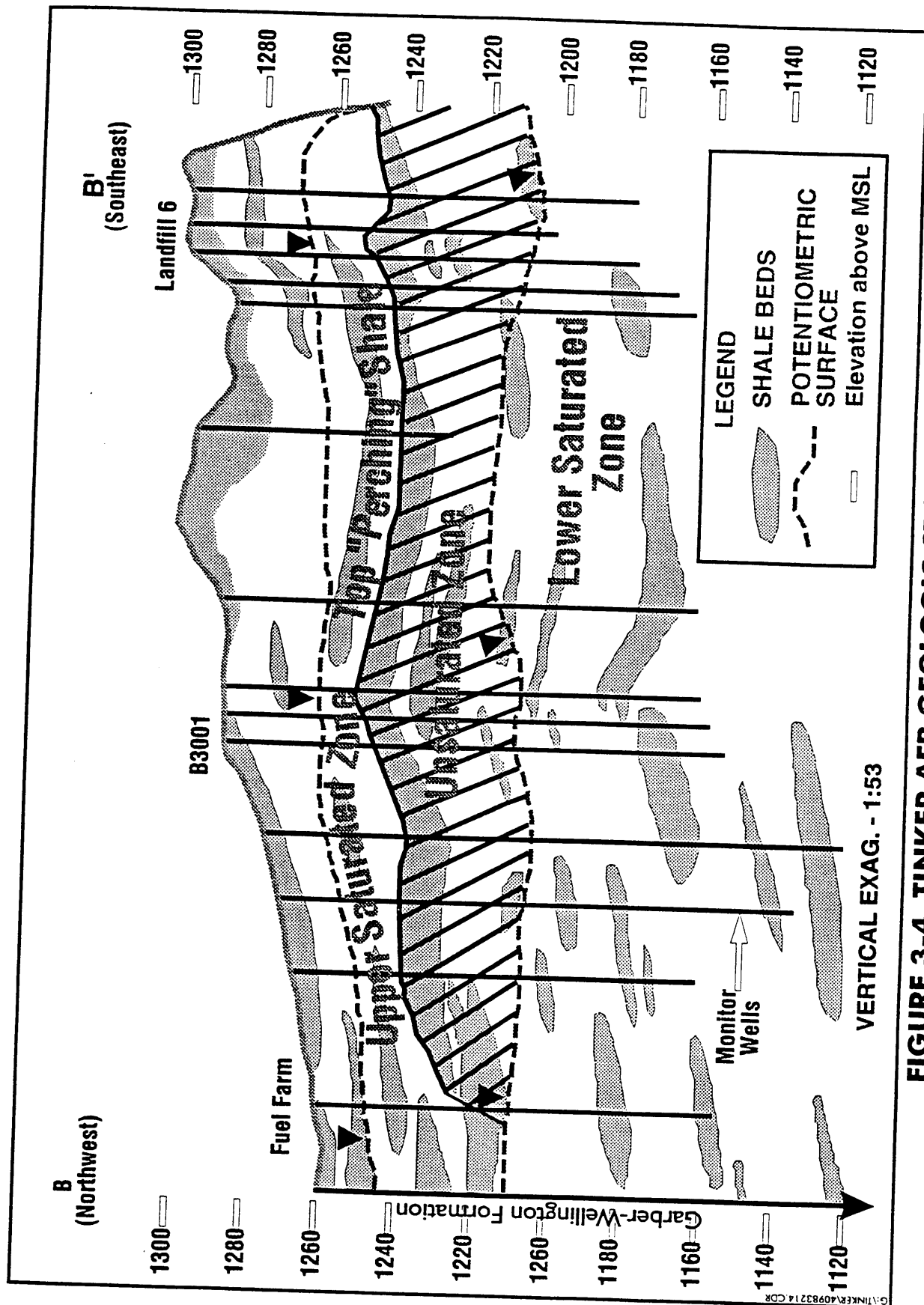


FIGURE 3-4 TINKER AFB GEOLOGIC CROSS SECTION B-B'

Oklahoma City area dip westward at a low angle. A regional dip of 0.0057 to 0.0076 ft/ft in a generally westward direction is supported by stratigraphic correlation on geologic cross sections at Tinker AFB. Bedrock units strike slightly west of north.

Although Tinker AFB lies in a tectonically stable area, regional dips are interrupted by buried structural features located west of the Base. A published east-to-west generalized geologic cross section, which includes Tinker AFB, supports the existence of a northwest-trending structural trough or syncline located near the western margin of the Base. The syncline is mapped adjacent to and just east of a faulted anticlinal structure located beneath the Oklahoma City Oil Field. The fault does not appear to offset Permian-age strata. There are indications that the syncline may act as a "sink" for some regional groundwater (southwest flow) at Tinker AFB before it continues to more distant discharge points.

3.2.2 Site Geology

OPSA is situated north of the Hennessey Group erosional edge, and lies within the outcrop area of the Garber-Wellington formation. Three soil borings were drilled to develop lithologic logs. Stratigraphic samples were taken continuously with a 5-foot tube sampler to a depth of 18.5 feet after encountering the water table at 13.7 and 15.9 feet below ground surface.

Each of the three 18.5-foot borings is characterized by clayey sand in the lower section, grading upward into sandy clay through the middle section, and fining to clay in the upper 3 feet. Boring SB-039 was also marked by 1 foot of gravel fill at the top of the boring as it was situated in a gravel driveway between Buildings 1005 and 1007.

Additional information on the site geology has been obtained from the SDB RFI. At the SDB, which is immediately adjacent to and east of the OPSA, ten soil borings were drilled and sampled, six monitoring wells installed, and 26 soil gas samples were taken.

Of the ten SDB borings, two borings (2-68A and 2-68B) can be used to describe some of the deeper geology in the vicinity of OPSA. Wells 2-68A and 2-68B, installed under the SDB, are located approximately 75 feet east of the OPSA. Though the subsurface stratigraphy at Tinker AFB is known to be laterally discontinuous over short horizontal distances, the lithologic logs for the shallow sections of wells 2-68A and 2-68B can be correlated with moderate variations in thickness to the shallow soil borings at the OPSA. The upper 20 feet of the well 2-68B boring is nearly identical to the shallow borings at OPSA, exhibiting a

fining upward sequence grading from clayey sand to silty, sandy clay to clay in the uppermost 5-foot section. Therefore, the general stratigraphic pattern observed in the deeper sections of the 2-68A and 2-68B logs can reasonably be projected under this OPSA.

In the 2-68A and 2-68B borings, a loose, sandy, gravelly clay unit extending from 20 to approximately 25-foot depth marks the base of the fining upward sequence. This gravelly unit presumably would have been encountered in the OPSA borings had they been extended another 5 feet. At 25 feet a sharp contact with hard, dense, clayey silt marks the base of the gravelly unit. Continuing down the section on the 2-68A well boring, the sediments, once again, become coarser grading from the clayey silt into a weakly laminated silty sand after approximately 28 feet.

From 35 feet down to the total depth of 70 feet, the geologic interpretation of the 2-68A well boring is based solely on the geophysical log as the remaining section was drilled via mud rotary techniques. The geophysical log suggests that the section consists of a series of three fining upward packages each marked by a sharp contact with the underlying sequence at its base. The clayey silt observed from 25 to 28 feet apparently is the top of the second fining upward, clastic sequence marked by a sharp basal contact with the clayey sediments capping the third sequence. The third sequence is bounded by a sharp contact with clayey sediments beginning close to 60 feet in depth which appear to coarsen with depth to the end of the log at 68 feet.

3.3 Hydrology

3.3.1 Regional/Tinker AFB Hydrology

The most important source of potable groundwater in the Oklahoma City metropolitan area is the Central Oklahoma aquifer system. This aquifer extends under much of central Oklahoma and includes water in the Garber Sandstone and Wellington Formation, the overlying alluvium and terrace deposits, and the underlying Chase, Council Grove, and Admire Groups. The Garber Sandstone and the Wellington Formation portion of the Central Oklahoma aquifer system is commonly referred to as the "Garber-Wellington aquifer" and is considered to be a single aquifer because these units were deposited under similar conditions and because many of the best producing wells are completed in this zone. On a regional scale, the aquifer is confined above by the less permeable Hennessey Group and below by the Late Pennsylvanian Vanoss Group.

Tinker AFB lies within the limits of the Garber-Wellington groundwater basin. Presently, Tinker AFB derives most of its water supply from this aquifer and supplements the supply by purchasing from the Oklahoma City Water Department. The nearby communities of Midwest City and Del City derive water supplies from both surface sources and wells tapping the aquifer. Industrial operations, individual homes, farm irrigation, and small communities not served by a municipal distribution system also depend on the Garber-Wellington aquifer. Communities presently depending upon surface supplies (such as Oklahoma City) also maintain a well system drilled into the Garber-Wellington aquifer as a standby source of water in the event of drought.

Recharge of the Garber-Wellington aquifer is accomplished principally by percolation of surface waters crossing the area of outcrop and by rainfall infiltration in this same area. Because most of Tinker AFB is located in an aquifer outcrop area, the Base is considered to be situated in a recharge zone.

According to Wood and Burton (1968) and Wickersham (1979), the quality of groundwater derived from the Garber-Wellington aquifer is generally good, although wide variations in the concentrations of some constituents are known to occur. Wells drilled to excessive depths may encounter a saline zone, generally greater than 900 feet below ground surface. Wells drilled to such depths or those accidentally encountering the saline zone are either grouted over the lowest screens or may be abandoned.

Tinker AFB presently obtains its water supplies from a distribution system comprised of 29 water wells constructed along the east and west Base boundaries purchased from the Oklahoma City Water Department. All Base wells are finished into the Garber-Wellington aquifer. Base wells range from 700 to 900 feet in finished depth, with yields ranging from 205 to 250 gallons per minute. The wells incorporate multiple screens, deriving water supplies from sand zones with a combined thickness from 103 to 184 feet (Wickersham, 1979).

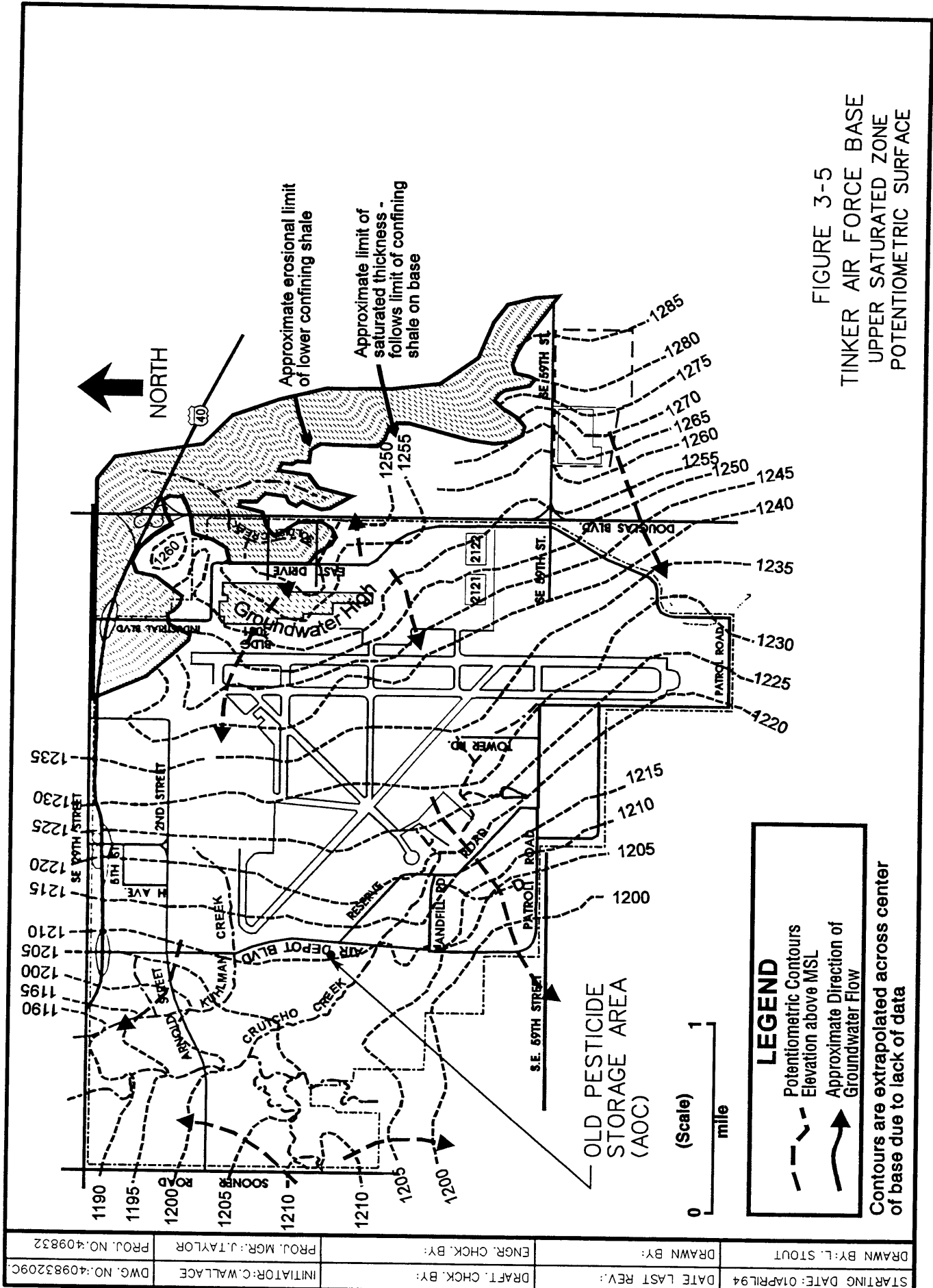
Conceptual Hydrologic Model. The hydrologic conceptual model of Tinker AFB involves a comprehensive review of available data, including those from direct measurement sources (borings, water level measurements, pump/slug tests, stream studies) as well as indirect sources (aerial photographs, topographic maps, published reports). The hydrologic system at Tinker AFB is complex, but the model provides both an approximation of depth to water and an estimated direction of groundwater movement and is therefore useful as a basis

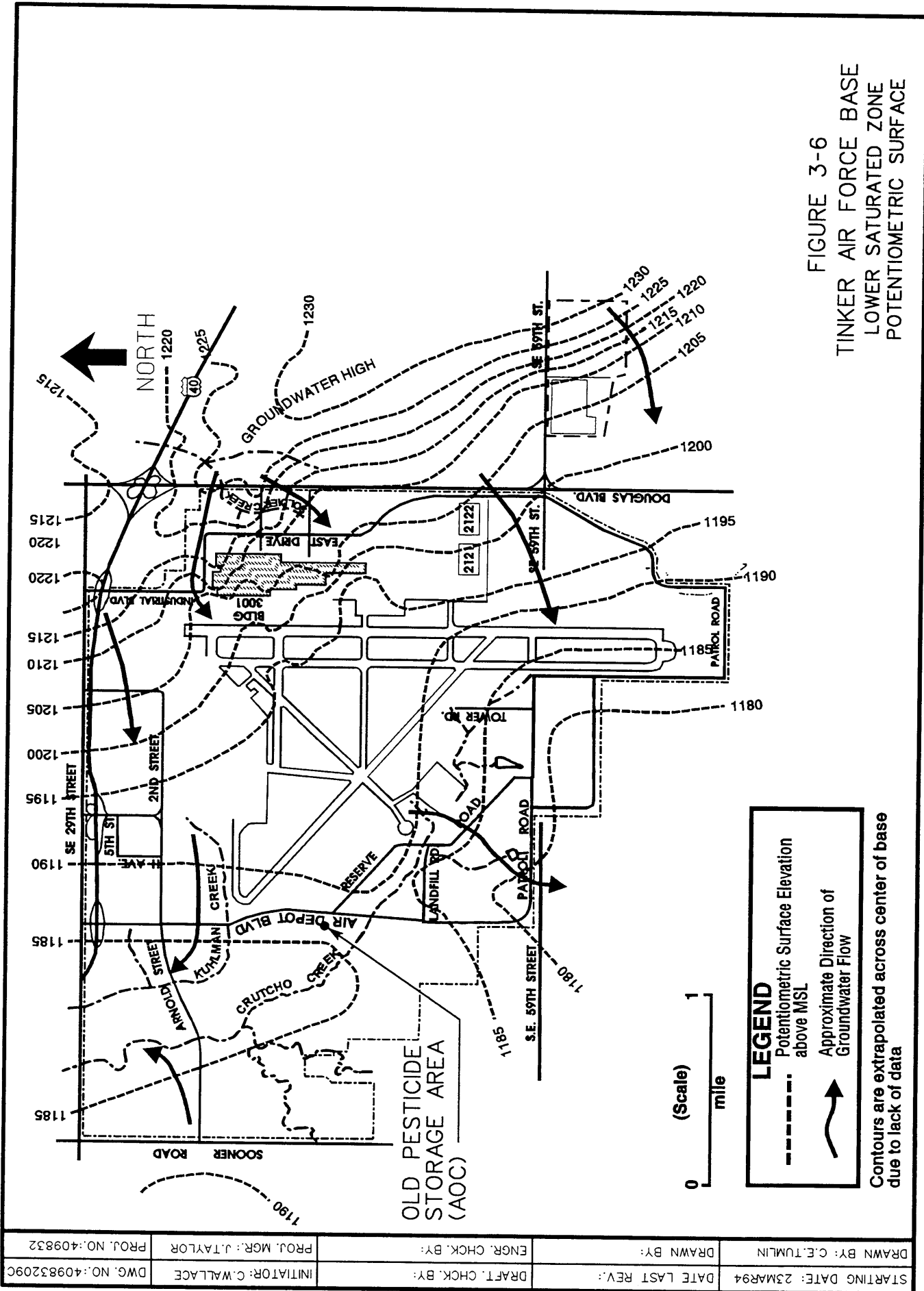
for designing field investigations. As information is derived from investigations, the model is continually updated and refined.

Groundwater. As a result of ongoing environmental investigations and the approximately 450 groundwater monitoring wells installed on the Base during various investigations, a better understanding of the specific hydrological framework has emerged. The current conceptual model developed by Tinker AFB (Tinker, 1993), based on the increased understanding of the hydrological framework, has been revised from a previous model adopted by the U.S. Army Corps of Engineers (USACE). Previous studies reported that groundwater was divided into four water bearing zones: the perched aquifer, the top of regional aquifer, the regional aquifer, and the producing zone. In the current model, two principal water table aquifer zones and a third less extensive zone have been identified. The third is limited to the southwest quadrant. The third aquifer zone consisted of saturated siltstone and thin sandstone beds in the Hennessey Shale and equates to the upper water bearing zone (UWBZ) described by the USACE at Landfills 1 through 4 (SWMUs-3 through -6). In addition, numerous shallow, thin saturated beds of siltstone and sandstone exist throughout the Base. These beds are of limited areal extent and are often perched.

In the current conceptual hydrologic model by Tinker AFB, an upper saturated zone (USZ) and a lower saturated zone (LSZ) are recognized in the interval from ground surface to approximately 200 feet. Below this depth is found the producing zone from which the Base draws much of its water supply. Figure 3-5 shows the potentiometric surface for the USZ and Figure 3-6 shows the potentiometric surface for the LSZ. The USZ exists under water table (unconfined) conditions, but may be partially confined locally. Conditions in the LSZ are difficult to determine due to screen placement and overlie long sand packs below the screen interval.

The USZ is found at a depth of 5 to 70 feet below ground surface and has a saturated thickness ranging from less than 1 foot at its eastern boundary to more than 20 feet in places west of Building 3001. The USZ is erosionally truncated by Soldier Creek along the northeastern margin of Tinker AFB (Figure 3-5). This aquifer zone is considered to be a perched aquifer over the eastern one-third of Tinker AFB, where it is separated from the LSZ by an underlying confining shale layer and a vadose zone. The confining interval extends across the entire Base, but the vadose zone exists over the eastern one-third of this area. The available hydrologic data indicate that the vadose zone does not exist west of a north-south line located approximately 500 to 1,000 feet west of the main runway; consequently, the USZ





STARTING DATE: 23MAR94	DATE LAST REV:	DRAFT, CHK, BY:	INITIATOR: C.WALLACE	DWG. NO.: 40983209C
DRAWN BY: C.E.TUMLIN	DRAWN BY:	ENGR. CHK, BY:	PROJ. MGR: J.TAYLOR	PROJ. NO.: 409832

is not perched west of this line. However, based on potentiometric head data from wells screened above and below the confining shale layer, the USZ remains a discrete aquifer zone distinct from the LSZ even over the western part of the Base. In areas where several shales interfinger to form the lower confining interval rather than a single shale bed, "gaps" may occur. In general, these gaps are not holes in the shale but are places where multiple shales exist that are separated by slightly more permeable strata. Hydrologic data from monitoring wells indicate that these zones allow increased downward flow of groundwater above what normally leaks through the confining layer.

The LSZ is hydraulically interconnected and can be considered one aquifer zone down to approximately 200 feet. This area includes what was referred to by the USACE as the top of regional and regional zones. Hydrologic data from wells screened at different depths at the same location within this zone, however, provide evidence that locally a significant vertical (downward) component of groundwater flow exists in conjunction with lateral flow. The magnitude of the vertical component is highly variable over the Base. Preliminary evidence suggests that the LSZ is hydraulically discrete from the producing zone. Due to variations in topography the top of the lower zone is found at depths ranging from 50 to 100 feet below ground surface under the eastern parts of the Base and as shallow as 30 feet to the west. Differences in potentiometric head values found at successive depths are due to a vertical (downward) component of groundwater flow in addition to lateral flow and the presence or absence of shale layers that locally confine the aquifer system. The LSZ extends east of the Base (east of Soldier Creek) beyond the limits of the USZ where it becomes the first groundwater zone encountered in off-Base wells. Because of the regional dip of bedding, groundwater gradient, and topography, the LSZ just east of the Base is generally encountered at depths of less than 20 feet.

Across the central portion of Tinker AFB, the unsaturated zone separating the USZ and LSZ disappears where the intervening shale layer dips below the surface of the LSZ (Figure 3-6). The disappearance of the unsaturated zone is supported by data from recently completed wells just west of the north-south runway and near Base Operations and by data from wells in the southwest portion of the Base. Measured water levels in two of the new wells show that the LSZ is confined at these locations by the shale separating the USZ and LSZ. No unsaturated interval is present.

To the southwest, measured water levels from wells screened in the Garber Sandstone at Landfills 2 and 4, SWMUs-4 and -6, which correspond in the conceptual model to the USZ

under the east part of the Base, show that the USZ remains unconfined or is partially confined. This zone is essentially the first water level encountered in the Garber Sandstone on the Base. Potentiometric data from wells in the southwest screened in deeper intervals, that correspond roughly to the LSZ to the east indicate that the LSZ is confined in this area. Data from wells screened at various intervals to a depth of about 90 feet in this area also show that no vadose (unsaturated) zone separates the USZ from the rest of the aquifer. The upper and lower zones cannot be distinguished in this area except by correlating geologic units across Base.

Farther to the southwest of the landfills, near the edge of the Base, another unsaturated zone is found separating groundwater in the Hennessey Group from the Garber-Wellington aquifer. This unsaturated zone is not continuous with that encountered on the east side of the Base. The groundwater in the overlying Hennessey water bearing zone represents the third groundwater zone of more limited areal extent mentioned previously. This shallow unconfined aquifer system is located on a topographic high (groundwater divide) in the strata of the Hennessey Group. Radial flow of groundwater off the divide toward nearby tributaries of Crutcho Creek is suggested from limited water level measurements. Additional shallow perched saturated zones of limited areal extent are thought to exist in other sandstone and siltstone beds within the Hennessey water bearing zone. Along the western margin of Tinker AFB west of Crutcho Creek, the shallow groundwater in the Hennessey water bearing zone and probably groundwater in the most shallow saturated zones in the Garber-Wellington aquifer appears to flow toward stream tributaries, and therefore, does not follow regional flow patterns to the west/southwest.

The aquifer zones in the conceptual model are hydraulically connected, although sometimes only to a very local extent, either directly as in the west part of the Base or indirectly through leakage and/or recharge patterns related to local streams. Because Tinker AFB is located in a recharge zone for the Central Oklahoma aquifer both horizontal and vertical (downward) components of groundwater flow exist. Measured potentiometric levels from well clusters with screens and filter packs placed at varying depths within the LSZ show that hydraulic heads decrease with depth and that the magnitude of the vertical component of flow varies with location. This finding is particularly important to recognize where data from these wells are being used to generate potentiometric contour maps.

Although the variability in the geology and the recharge system at Tinker AFB makes it difficult to predict local flow paths, Central Oklahoma aquifer system water table data taken

from the 1992 USGS Hydrologic Atlas show that regional groundwater flow under Tinker AFB varies from west/northwest to southwest depending on location. This finding is supported by contoured potentiometric data from Base monitoring wells, which show groundwater movement in the upper aquifer zones to generally follow regional dip. Measured normal to potentiometric contours, groundwater flow gradients range from 0.0019 to 0.0057 ft/ft. However, because flow in the near surface portions of the aquifer at Tinker AFB is strongly influenced by topography, local stream-based levels, complex subsurface geology and location in a recharge area, both direction and magnitude of groundwater movement is highly variable. The interaction of these factors not only influences regional flow, but also gives rise to complicated local, often transient, flow patterns at individual sites.

Several examples demonstrate this variability. Historical water level data around Crutch Creek indicate that groundwater flow in that area is predominantly to the southwest. However, during high flow conditions bank recharge occurs and shallow local flow patterns near the creek may be reversed. This pattern is probably in effect at other streams as well. In the northeast quadrant of the Base, several factors contribute to groundwater "mounding" in the USZ and to formation of a groundwater high in the LSZ. This mounding leads to radial or semiradial groundwater flow at shallow depths. Finally, in the northeast part of the Base where sufficient data exist, comparison of potentiometric contours from successively deeper levels in the LSZ suggests that groundwater flow directions change with depth, gradually turning from west/southwest to northwest. This change in regional flow is attributed either to effects of pumping from deep water supply wells in the area and/or to the presence of the Deep Fork River located to the north. This river, along with the Canadian River south of Tinker AFB, has been demonstrated by the USGS to act as a major discharge point for regional groundwater in Central Oklahoma.

Surface Water. The interaction of surface water with groundwater is an important factor in predicting local groundwater flow patterns at Tinker AFB. Although no technical stream study data are presently available to determine what degree of interaction occurs between streams and groundwater, some qualitative observations provide clues to the importance of this system. The direction of stream flow on Tinker AFB appears to be controlled largely by a topographic divide that extends from southwest to northeast across the south part of the Base. Streams that originate on the north side of the divide flow to the north, including Soldier Creek, Crutch Creek, and Kuhlman Creek. Elm Creek, which has its origin on the southeast side, flows to the south. Streams that flow northward become perennial before leaving the Base and, with no other constant source of water available, are considered to be

recharged by the aquifer (gaining streams). Some data indicate, however, that these streams become dry north of the Base during periods of lower precipitation and lose water to the aquifer (losing streams). Information from wells and piezometers near the ponded section of Soldier Creek at the industrial wastewater treatment plant also suggests that the pond contributes to the groundwater (a losing stream) in the LSZ at that location. Portions of Soldier Creek tributaries (near their headwaters, off-Base) flow only intermittently and probably recharge the aquifer through infiltration during periods of higher precipitation. Finally, where groundwater and stream elevations are the same, the observed direction of groundwater flow may be affected by transient factors such as bank storage from periods of increased precipitation.

Man-Made Structures. In the conceptual model of Tinker AFB, it is recognized that man-made features such as buried utilities (storm drains, waste lines) may further complicate the shallow groundwater situation. An additional problem encountered in generating the model involves improper monitoring well construction practices, which not only may contribute preferred pathways for groundwater (and contaminant) movement where wells have multiple screens or overlie long filter packs, but also often provide nonrepresentative, biased groundwater, and sample data.

The complex groundwater system at Tinker AFB makes correct placement and construction of monitoring and extraction wells critical. A good understanding of the conceptual hydrologic framework is essential to obtain representative data and to minimize errors. An integrated hydrologic conceptual model provides an overview of the groundwater system and leads in turn to more effective site project management.

3.3.2 Site Hydrology

The three soil borings drilled at the OPSA were advanced down to the top of the first water encountered. The depth to water in the borings as documented by the site geologist from boring logs ranged from 13.7 feet below ground surface to 15.9 feet below ground surface.

Comparing this groundwater data to the USZ potentiometric surface map developed for the SDB reveals correlation of the water level within 2 feet.

3.4 Soils

The surface soils of Tinker AFB have been studied by the U.S. Department of Agriculture (USDA), Soil Conservation Service (1969) and by several soil boring projects conducted for

geotechnical (foundation construction) investigations. Surface soils of the installation area are predominantly of two basic types: residual and alluvial. The three major soil associations (Table 3-2) mapped within installation limits are Darrell-Stephenville, Renfrow-Vernon-Bethany, and Dale-Canadian-Port. The residual soils associations, Darrell-Stephenville and Renfrow-Vernon-Bethany are the products of the weathering of underlying bedrock. The alluvial materials of the Dale-Canadian-Port association are stream-deposited silts and sands, which are typically restricted to floodplains of area streams.

Table 3-2**Tinker AFB Soil Associations
(Source: USDA, 1969)**

Association	Description	Thickness (in.)	Unified Classification ^a	Permeability (in./hr)
Darrell-Stephenville: loamy soils of wooded uplands	Sandy loam Sandy clay loam Soft sandstone (Garber Sandstone)	12-54	SM,ML,SC	2.0-6.30
Renfrow-Vernon-Bethany: loamy and clayey soils on prairie uplands	Silt loam - clay Clay loam Shale (Fairmont Shale)	12-60	ML,CL,MH,CH	<0.60-0.20
Dale-Canadian-Port: loamy soil on low benches near large streams	Fine sandy loam Silty clay loam Loam Clay loam	12-60	SM,ML,CL	0.05-6.30

^aUnified classifications defined in U.S. Bureau of Reclamation (USBR) 5005-86.

4.0 Description of Investigative Methods

The Phase I field investigation of the subsurface conditions at the OPSA was conducted from October through December 1993. All activities conducted during the field investigation program were performed in accordance with the Work Plan, the Data Management Plan, the Data Collection Quality Assurance Plan, the Health and Safety Plan, and their Amendments (IT, 1993a). As a Phase I investigation, field activities were designed to provide information on subsurface lithologies and the existence and nature of contamination, if any, in the soils beneath the OPSA. After evaluating soil conditions and determining the extent of RCRA requirements, recommendations are made in Chapter 9.0. When evidence of contamination is present, specific recommendations for a Phase II investigation are provided. If no contamination is found, close out is recommended. Field investigation activities described in the following sections included subsurface soil sampling of soil borings, and a soil gas survey (Table 4-1). A total of three soil borings were sampled to determine whether a release has occurred at the OPSA.

4.1 Soil Borings

Three soil borings, SB-039, SB-040, and SB-041, were drilled in the subsurface adjacent to Buildings 1005 and 1007 to determine whether a release had occurred at the OPSA (Figure 4-1). At the OPSA, each of the three borings were only advanced and sampled to the top of the perched water table (USZ) as this Phase I investigation focuses on impacts, if any, to soils. SB-039 was placed in the gravel driveway between Buildings 1005 and 1007, and SB-040 and SB-041 were located along the primary drainage pathways for storm water runoff from the paved area along the western walls of the buildings. Boring SB-039 was placed between the buildings in the area where the pesticides were loaded/unloaded and mixed. This boring would help detect any releases in the loading area. Borings SB-040 and SB-041 were placed on the west side of Buildings 1005 and 1007 since any releases of spills would drain to these areas.

The area to the north and east of Building 1005 is occupied by the wastewater treatment vessels that prohibit drilling rig access for completing borings on these sides of the building. Borings were not conducted inside the buildings due to accessibility problems.

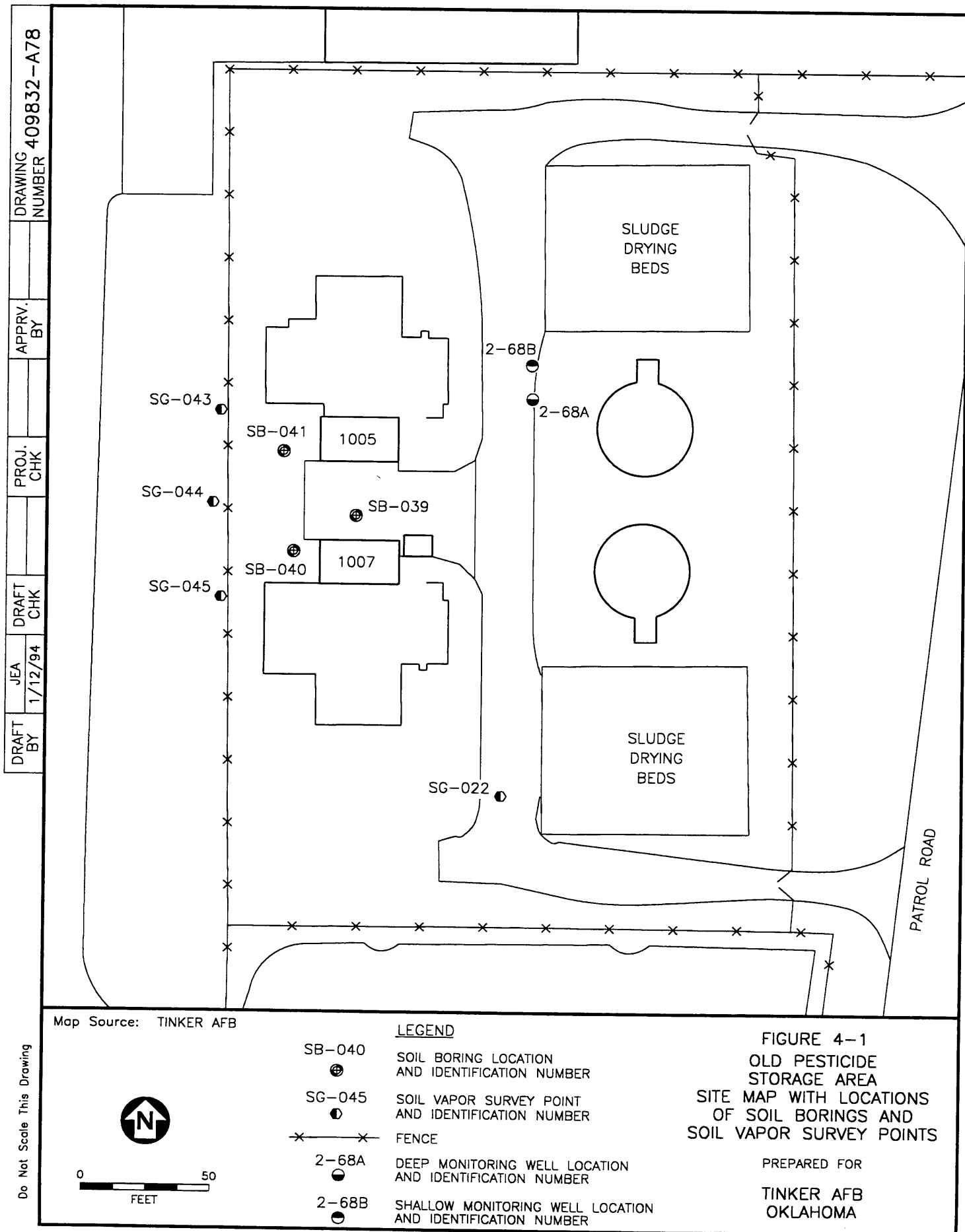
In addition to the three OPSA borings, well 2-66B, which was drilled to provide information on background soil conditions for the SDB RFI, will also be used for this OPSA report. Well

Table 4-1
Summary of RFI Field Activities
AOC, OPSA, Tinker AFB

Type of Activity	Number of Locations	Cumulative Footage of Borings/Wells	Average Footage per Boring/Well	No. of Samples Collected for Chemical Analysis									Analyses Performed	Geotechnical Samples ^a
				Normal Samples	Duplicates	Rinsates	Field Blanks	Trip Blanks	MS	MSD	Lab Blanks	Totals		
Soil borings	3	55.5	18.5	13	0	1	0	2	2	2	4	24	1	
Soil Gas Survey	3	30	10.0	3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3	n/a	

Notes:

^aGeotechnical analysis included grain-size distribution, moisture content, cation exchange capacity, and vertical permeability.
VOCs - Volatile organic compounds - EPA Method 8240.
SVOCs - Semivolatile organic compounds - EPA Method 8270.
Metals - EPA Method 6010: Al, Ag, As (EPA Method 7060); Ba, Be, Cd, Cr, hexavalent Cr (EPA Method 7196); Cu, Fe, Pb (EPA Method 7421); Ni, Zn, and Hg (EPA Method 7471).
BTEX - EPA Method 8020 (modified).
Halogenated Volatile Organics - Method 8010 (modified).



2-66B was drilled immediately adjacent to and east of the OPSA. Well 2-66B is located approximately 300 feet east of the OPSA on the east side of the Air Depot Boulevard.

Each of the three borings was drilled with 8-inch hollow-stem augers to a total depth of 18.5 feet and water was encountered at approximately 16 feet in each boring. A 5-foot tube sampler was used to continuously sample the borings for lithologic logging purposes. Based on odor, field screening with a photoionization detector/flame ionization detector (PID/FID), and visual inspection, one soil sample was collected for analytical purposes from each 5-foot interval of the boring to the top of the water table where a final sample was collected. Under this sampling scheme a total of 13 normal samples were collected for chemical analysis from the three borings. The samples were analyzed for VOCs, semivolatile organic compound (SVOC), and priority pollutant metals. In addition to the samples collected for chemical analysis, one sample from SB-40 was submitted for geotechnical analysis, which included grain-size distribution, moisture content, cation exchange capacity, and vertical permeability. Upon reaching total depth, each boring was filled to the surface with grout consisting of Portland Type I cement mixed with no more than 10 gallons of water per 94-pound bag and 5 percent bentonite gel per volume.

4.2 Soil Gas Survey

A soil gas survey was performed consisting of three vapor gas survey points situated west of the OPSA (Figure 4-1). Soil gas data collected during the SDB investigation from survey points immediately east of Building 1005 were also evaluated as part of the OPSA investigation. For the survey 1-inch rods were hydraulically driven to a depth of 10 feet. A collection port at the bottom of the rods was then used to extract a soil gas sample for VOC analysis. The soil gas survey report is included as Appendix B to this report. The soil gas survey was used as a screening method based on the relatively shallow water table, approximately 16 feet. The information obtained was used to locate the soil boring to ensure correct placement.

4.3 Elevation and Location Surveying

After grouting, the elevations and locations of the soil borings at the OPSA were determined by a surveyor licensed by the State of Oklahoma. For each soil boring, the ground surface directly adjacent to the grouted hole was surveyed relative to base data provided by Tinker AFB. Elevations and locations of any pre-existing monitoring wells and piezometers at the OPSA were also determined. All locations are provided in the Base coordinate system and all elevations are given relative to msl. The surveyor's report is included as Appendix D to this report.

5.0 Investigation Results

The following sections provide an evaluation of the data quality and the results of the RFI performed at the OPSA. Section 5.1 reviews the procedures and methods used to ensure data quality and useability. Section 5.2 provides a discussion of the source characterization and the potential of the OPSA as a contributing source for contamination. Section 5.3 provides details regarding the contaminant characterization via the analysis of the analytical results from the soils investigation. The groundwater was not investigated at the OPSA and thus will not be discussed as a part of this RFI Report.

5.1 Data Quality Evaluation

The quality of the analytical data used for the RFI must be sufficient to support the associated risk management decisions. Data quality is ensured through adherence to Data Quality Objectives (DQO) and the sampling and analysis program outlined in the Data Collection Quality Assurance Plan (DCQAP) (IT, 1993b). The DCQAP identifies sampling locations, sampling methods, DQOs, field and laboratory quality control (QC) testing, analytical methods and reporting, and data evaluation and verification. The QC of field and laboratory activities; the assessment of precision, accuracy, and comparability of the data; and the verification of the data are the most significant activities designed to ensure compliance with the DQOs.

5.1.1 Field Quality Control

Field QC testing involved the collection of control samples to aid in evaluating inaccuracies which may be induced by field activities. These control samples include:

- **Field Blanks.** A field blank is an amount of water, gas, or solid that is provided to demonstrate the absence of contamination during sampling. Field blanks were only collected for groundwater and waste samples.
- **Trip Blanks.** Volatile organics samples are susceptible to contamination by diffusion of organic contaminants into the sample container. Therefore, trip blanks were analyzed to monitor for sample contamination during shipment and storage. No trip blanks were obtained for soil samples, due to the dissimilarity in matrix between the blanks and the actual samples.
- **Rinsate Blanks.** A rinsate blank is a volume of rinse solution (e.g., deionized distilled laboratory water or organic solvent) used to rinse a sampling tool which contacts more than one sample. The rinse solution was collected after the

sampling tool was used and cleaned, to demonstrate that no residual contamination remained on the tool to carry over to the next sample.

- **Field Duplicates.** Duplicate analyses were performed to evaluate the precision of analysis. Both field and laboratory duplicates were taken and analyzed. Results of these analyses were used to determine the relative percent difference (RPD) between replicate samples.

5.1.2 Laboratory Quality Control

Laboratory QC testing involved the use of control samples to aid in evaluating QC errors, which may be induced by laboratory activities. The control samples include:

- **Method Blanks.** A method blank is a volume of deionized and distilled laboratory water for liquid samples, or a purified solid matrix for soil/sediment samples, carried through the entire analytical procedure to identify contaminants introduced during the procedure.
- **Bottle Blanks.** At a frequency of 1 percent or greater, laboratory-prepared sample containers were tested to verify that the container cleaning procedure is performed acceptable. Parameters of concern for the particular container were tested (e.g., metals for plastic containers).
- **Laboratory Blanks.** Distilled water-filled volatile organic analysis (VOA) vials were stored in the laboratory using the same method of storage used for field samples. If the field and trip blanks contained high concentrations of contaminants, the laboratory blank was analyzed to identify the source of contamination.
- **Matrix Spikes.** To evaluate the effect of sample matrix on analytical methodology accuracy, a separate sample aliquot was spiked with the analyte of interest and analyzed with approximately ten samples or, if a smaller number of samples are associated with a test series, for each group of samples.
- **Surrogate Standards.** Surrogate standards are compounds added to gas chromatography/mass spectrometry (GC/MS) standards, blanks, and samples prior to extraction or purging to monitor the recovery efficiencies of the sample preparation and analytical procedures on a sample-by-sample basis.

5.1.3 Evaluation of Precision and Accuracy

As part of the analytical QC testing program, QC sample results were used to apply precision and accuracy criteria for each parameter that was analyzed. When the analysis of a sample set was completed, the QC data generated were evaluated based on the following criteria:

- **Method Blank Evaluation.** The method blank results were evaluated for high readings characteristic of background contamination. If high blank values were

observed, laboratory glassware and reagents were checked for contamination and the analysis of future samples halted until the system could be evaluated.

- ***Trip, Field, Laboratory, and Rinsate Blank Evaluation.*** Trip, field, laboratory, and rinsate blank results were evaluated for high readings similar to the method blanks described above. If high blank readings were encountered, the procedure for sample collection, shipment, and laboratory analysis would be reviewed.
- ***Duplicate Sample Evaluation.*** Duplicate sample analysis was used to determine the precision of the analytical method for the sample matrix. The duplicate results will be used to calculate the precision as defined by the RPD.
- ***Matrix Spike Evaluation.*** The observed recovery of the spike versus the theoretical spike recovery was used to calculate accuracy as defined by the percent recovery (%R).
- ***Surrogate Standard Evaluation.*** The results of surrogate standard determinations were compared with the true values spiked into the sample matrix prior to purging or extraction and analysis, and the percent recoveries of the surrogate standards were determined.
- ***Comparability Between Data Sets.*** Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. Comparability for sampling and analysis was achieved by specifying and using only well-recognized techniques and accepted standard EPA methods and procedures for sampling and analysis reporting of representative samples.

5.1.4 Data Verification

Data packages and parameters were evaluated against the following criteria to ensure data validity prior to use:

- Sampling documentation (e.g., sample collection log, Chain-of-Custody Form, and Request for Analysis Form) matches samples submitted to samples analyzed.
- Chain-of-Custody Forms are complete.
- Sample identification summary for each sample is present.
- Analytical results for each sample include correct units, detection limits, method used, date sampled, date extracted, date analyzed, dilutions noted.
- Holding times were met.
- Data on field and laboratory duplicate samples for RPDs were within QC limits.

- Matrix spike/matrix spike duplicate (MS/MSD) recoveries were within QC limits.
- Method blanks were within control limits.

5.1.5 Data Useability

The data verification did not identify any reoccurring problems with analytical procedures or analytical reporting. Precision and accuracy for each analytical method as demonstrated by the evaluation or surrogate recoveries, laboratory control samples, MS, and MSD recoveries were satisfactory. The sample identification summaries for all samples and methods were present and complete. No data were found to be invalid. All deficiencies encountered were minor and did not affect the overall quality of the data, since other DQOs were met. Deficiencies were generally the result of matrix interference.

The analytical data generated from the RFI are of sufficient quality to make evaluations and support recommendations.

5.2 Source Characterization Results

The OPSA is located at Building 1005, which is on the west side of the Base, just west of Air Depot Boulevard. Building 1005 was constructed as part of a sanitary waste treatment plant which was operational from the early 1950s until 1971. The building reportedly was used to store and mix pesticides, however, the exact dates of these operations are not known. The sanitary waste treatment plant also includes AOC, SDB, which is concerned with eight sludge drying beds that were recently used as a 90-day storage site for hazardous waste drum accumulation. The SDB is simultaneously being investigated under this RFI (Volume II).

A source characterization investigation was not conducted or required at this site because the practice of storing and mixing pesticides has stopped. Therefore, there are no source materials at the OPSA site.

5.3 Contaminant Characterization Results

5.3.1 Establishment of Surficial Soil Background Concentrations

Background soil concentrations for trace metals were determined based on a study performed by the (USGS, 1991). The study area was confined to approximately four counties in central Oklahoma. Tinker AFB lies at the approximate center of this area. A total of 293 B-horizon soil samples were collected throughout this area. Soil samples were collected at the top of

the B-horizon, which was usually 20 to 30 centimeters below the surface but ranged from 3 to 50 centimeters below the surface. For site-specific analytes for which the USGS offered no background value, a site-specific background value was selected for comparison. This site-specific background sampling location was typically from an upgradient monitoring well boring.

The use of B-horizon soil as selected by the USGS for metals background concentrations in soil is conservative in that the soil sampled does not reflect all possible anthropogenic influences. Most of the samples were obtained from hill crests and well drained areas in pasture and forested land, well away from roadways to minimize contamination from vehicular emissions (i.e., nearly "pristine" areas). Trace metal inputs to the study site soils on Base, however, will come from anthropogenic sources outside of the study area, in addition to those sources related to disposal activities or operations within the confines of the study site. Responsibility may, therefore, be taken for more trace metal impacts than are actually attributable to a given site.

An additional level of conservatism was added in the manner in which the site-specific metals concentrations were compared to the background levels. Typically, the environmental concentrations of trace metals at study sites are represented by the arithmetic upper 95th confidence interval on the mean of a normal distribution. This upper 95th confidence interval value is then compared to the background values. The intent of this typical approach is to estimate a reasonable maximum exposure (RME) case (i.e., well above the average case) that is still within the range of possible exposures.

To expedite this comparison and establish greater conservatism, the maximum concentration found at the site of concern, rather than the upper 95th confidence interval value, was compared to the USGS background values. If the environmental concentration of a particular analyte was below or within the minimum-maximum range of the USGS background concentrations, that analyte was considered to be naturally occurring and of no further concern to this investigation. Given the conservative approach of the comparisons, site-specific metals concentrations would have to significantly exceed the USGS background levels and be attributable to operations at the site before they would be considered a constituent of concern.

The numerical comparison of site-specific metals concentrations to the USGS background concentrations is presented in the following section.

5.3.2 Soil Characterization

During the RFI performed at the OPSA, a total of 13 soil samples were collected from the three soil borings for chemical analysis. The VOCs, SVOCs, and metals (aluminum, arsenic, barium, beryllium, cadmium, chromium, chromium VI, copper, lead, mercury, nickel, silver, and zinc). The samples were retained for analysis based on field screening techniques. The results for detected analytes are presented in Table 5-1. The results of the highest detected analyte, for metals, are compared to the USGS background data, which is summarized in Table 5-2. All metal comparisons were less than the maximum value presented by USGS except for chromium VI and mercury. These two metals were not reported by USGS, so they were compared to the maximum values of the background samples collected for the RFI performed at the SDB.

Chromium VI and mercury were not detected in the SDB background samples. The chromium VI value was at the midpoint of the detection range. Mercury was detected at a concentration of 0.027 milligrams per kilogram (mg/kg), just above its detection unit of 0.023 mg/kg.

Acetone was the only organic analyte detected, but it was also found in the sample blank. Given the low values of detected acetone in the samples, it is assumed that the detects are laboratory related and should not be addressed as a concern from the operations of storing and mixing pesticides at OPSA. Appendix C provides a summary of all the results along with Certificate of Analysis and sample Chain-of-Custodies.

Due to the lack of elevated levels of chromium VI and mercury in the uppermost soils, it does not appear that the levels of chromium VI and mercury are a result of past operations at the OPSA. The uppermost soils are most likely composed of non-native fill material brought to the OPSA area during construction. The detected metals are most likely part of that fill material and their presence is independent of the operation of the OPSA. A soil boring summary is provided as Table 5-3.

A soil gas survey consisting of three vapor gas survey points situated west of the OPSA was also performed at the site (Figure 4-1). Soil gas data collected during the SDB investigation from survey points immediately east of Buildings 1005 were also evaluated as part of the OPSA investigation. During the survey 1-inch-diameter rods (with bottom collection parts) were hydraulically driven to a depth of 10 feet and the collection port at the bottom of the rods was then used to extract a soil gas sample for VOA. Figure 5-1 presents the three soil

Tinker Air Force Base
Table 5-1

5-7

Analytical Results for Old Pesticide Storage Area
for Soil
Tinker Air Force Base, Oklahoma
Table 5-1

Parameters	Well/Boring: Sample ID: Depth in Feet:	SB 040				SB 041				SB 041				SB 041			
		A1054		A1058		A1059		A1060		A1061		A1061		A1061		A1061	
		Result	QFR	Result	QFR	Result	QFR	Result	QFR	Result	QFR	Result	QFR	Result	QFR	Result	QFR
Metals (mg/kg)																	
Aluminum		8300	N	13000	N	8400	N	5800	N	9700	N						
Arsenic - Graphite Furnace				3.1		2.4		1.2		3.9							
Barium		530	N	210	N	210	N	330	N	930	N						
Beryllium		1.6		0.92		0.86		0.5		0.83							
Cadmium		0.1		0.57		1.5		0.58		0.7							
Chromium		12		12		12		8.8		16							
Chromium VI																	
Copper		8.4		8.2	N	7.8	N	5.8	N	9.3	N						
Iron		10000	N	12000	N	16000	N	6500	N	16000	N						
Lead - Graphite Furnace		8.8	N	11	N	4.9	N	5.1	N	10	N						
Mercury																	
Nickel		13		10		15		9.8		13							
Silver		0.14		0.57		0.41		0.33		0.67							
Zinc		15		21		17		15		18							
Volatiles (ug/kg)																	
Acetone		8.8	JB	10	JB			9.6	JB	11	JB						
B = Analyte was also found in sample blank E = Concentration exceeds instrument calibration range for that specific analysis J = Concentration is an estimated value N = Sample is outside of Matrix Spike QC Limit < = Not detected QFR = Qualifier Analytical data has not been validated																	

Table 5-2**Soil Metals Background Comparison
AOC, OPSA, Tinker AFB**

Analyte	Site	USGS Background Concentration	
	Maximum Value (ppm)	Detection Limit (ppm)	Range (ppm)
Aluminum	15,000	50	3800-89,000
Arsenic	11	0.1	0.6-21
Barium	930	1	47-6400
Beryllium	2.4	1	<1-3
Cadmium	1.5	2	<2
Chromium	16	1	5-110
Chromium-VI	0.26	0.1 ^a	<0.1-<0.5 ^a
Copper	11	1	<1-59
Iron	16,000	50	1,800-58,000
Lead	27	4	<4-27
Mercury	0.027	0.023	<0.023-<.024 ^a
Nickel	28	2	<2-61
Silver	0.69	2	<2
Zinc	21	2	3-79

^aSite-specific background value. USGS value not available.

Table 5-3

**RFI Soil Borings Summary
AOC, OPSA, Tinker AFB**

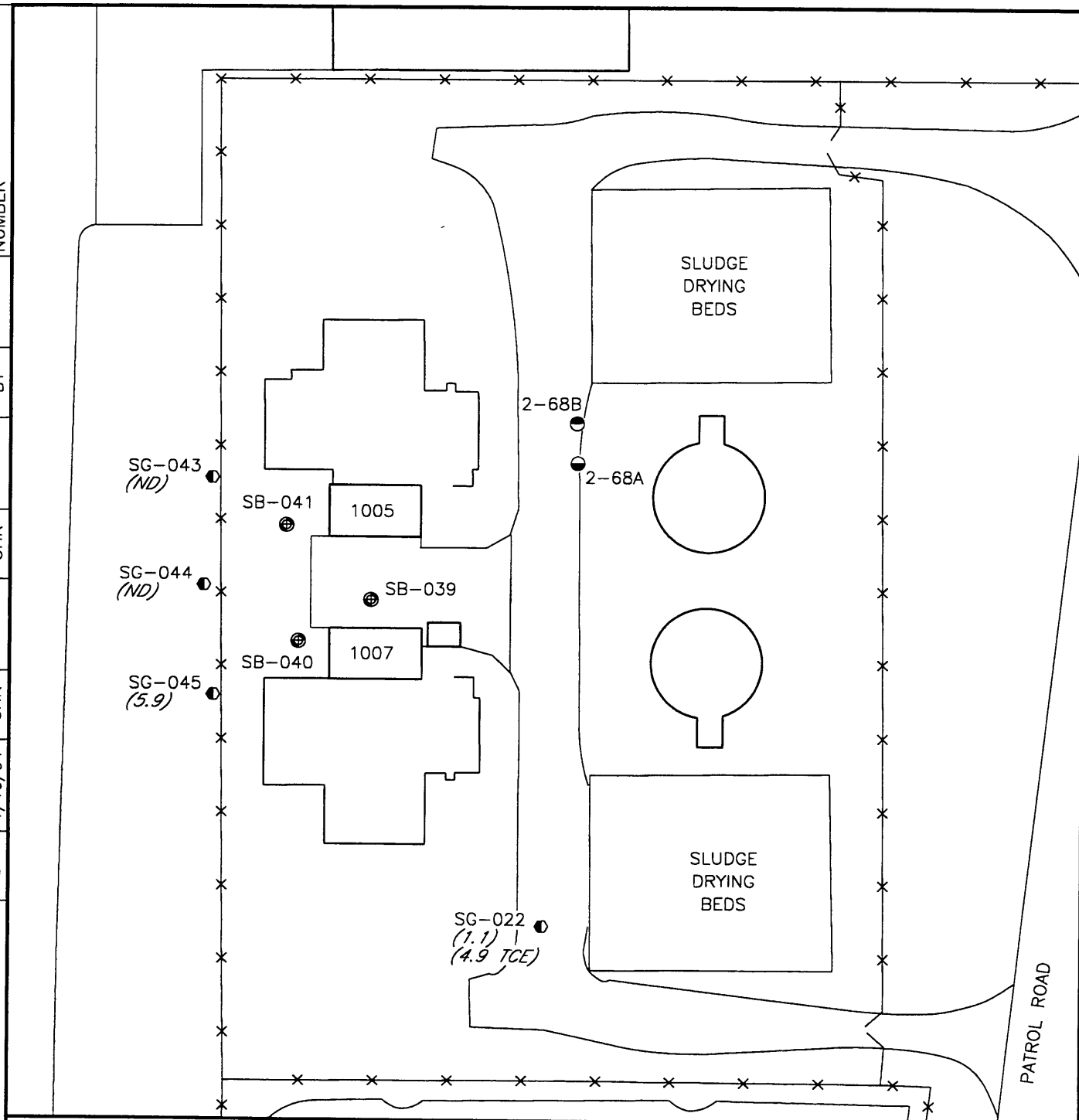
Boring ID	Date Completed	Boring Coordinates		Surface Elevation (msl)	Total Depth Drilled (fbgs)	Soil Samples ^a Collected for Analysis
		Northing	Easting			
SB-039	10/25/93	153410.174	2177198.420	1225.186	18.5	4
SB-040	10/25/93	153395.948	2177174.077	1225.367	18.5	6
SB-041	10/26/93	153435.613	2177169.986	1226.184	18.5	4
Totals					55.5	14

^aNumber of soil samples collected includes field duplicates and geotechnical samples.

msl - mean sea level

fbgs - feet below ground surface

DRAWING NUMBER	409832-A110	
APPRV. BY		
PROJ. CHK		
DRAFT CHK		
JEA 1/16/94		
DRAFT BY		



Map Source: TINKER AFB

LEGEND

- | | |
|--------|--|
| SB-040 | SOIL BORING LOCATION
AND IDENTIFICATION NUMBER |
| SG-045 | SOIL VAPOR SURVEY POINT
AND IDENTIFICATION NUMBER |
| (5.9) | 1,1 DICHLOROETHENE (1,1-DCE)
CONCENTRATION IN $\mu\text{g/L}$ |
| ND | NON DETECT |
| 2-68A | DEEP MONITORING WELL LOCATION
AND IDENTIFICATION NUMBER |
| 2-68B | SHALLOW MONITORING WELL LOCATION
AND IDENTIFICATION NUMBER |
| —X—X— | FENCE |



0 50
FEET

FIGURE 5-1
1,1 DICHLOROETHENE (1,1-DCE)
CONCENTRATIONS DETECTED BY
SOIL VAPOR SURVEY FOR THE
OLD PESTICIDE STORAGE AREA

PREPARED FOR
TINKER AFB
OKLAHOMA

Do Not Scale This Drawing

gas vapor survey locations at the OPSA and the locations at the SDB and the compounds detected during the soil gas survey. 1,1-Dichloroethene (DCE) was detected at 5.9 micrograms per liter ($\mu\text{g/L}$) in SG-045, and was the only compound detected during the soil gas survey. 1,1-DCE and tetrachloroethene (TCE) were detected at 1.1 $\mu\text{g/L}$ and 4.9 $\mu\text{g/L}$, respectively in SG-022 during the soil gas survey at the SDB. The analytical results from the soil vapor survey are qualitative only and do not have a direct correlation with VOC-impacted soil. Quantitative data on the extent of VOC-impacted soil was obtained by direct sampling of the media.

Figure 5-2 indicates the location of cross-section C-C'. Figure 5-3 provides the subsurface cross section for the C-C' traverse. Three soil borings were completed for lithologic logging and analytical sampling purposes under the RFI conducted at the OPSA. To obtain complete stratigraphic logs, borings were sampled continuously with a 5-foot tube sampler. Each boring at OPSA was completed to a depth of 18.5 feet after encountering the water table at approximately 16 feet. Figure 4-1 shows the boring locations at the OPSA. Additional information on the site geology was obtained from the RFI conducted at the SDB, which is immediately adjacent to and east of the OPSA where ten soil borings were drilled and six monitoring wells were installed.

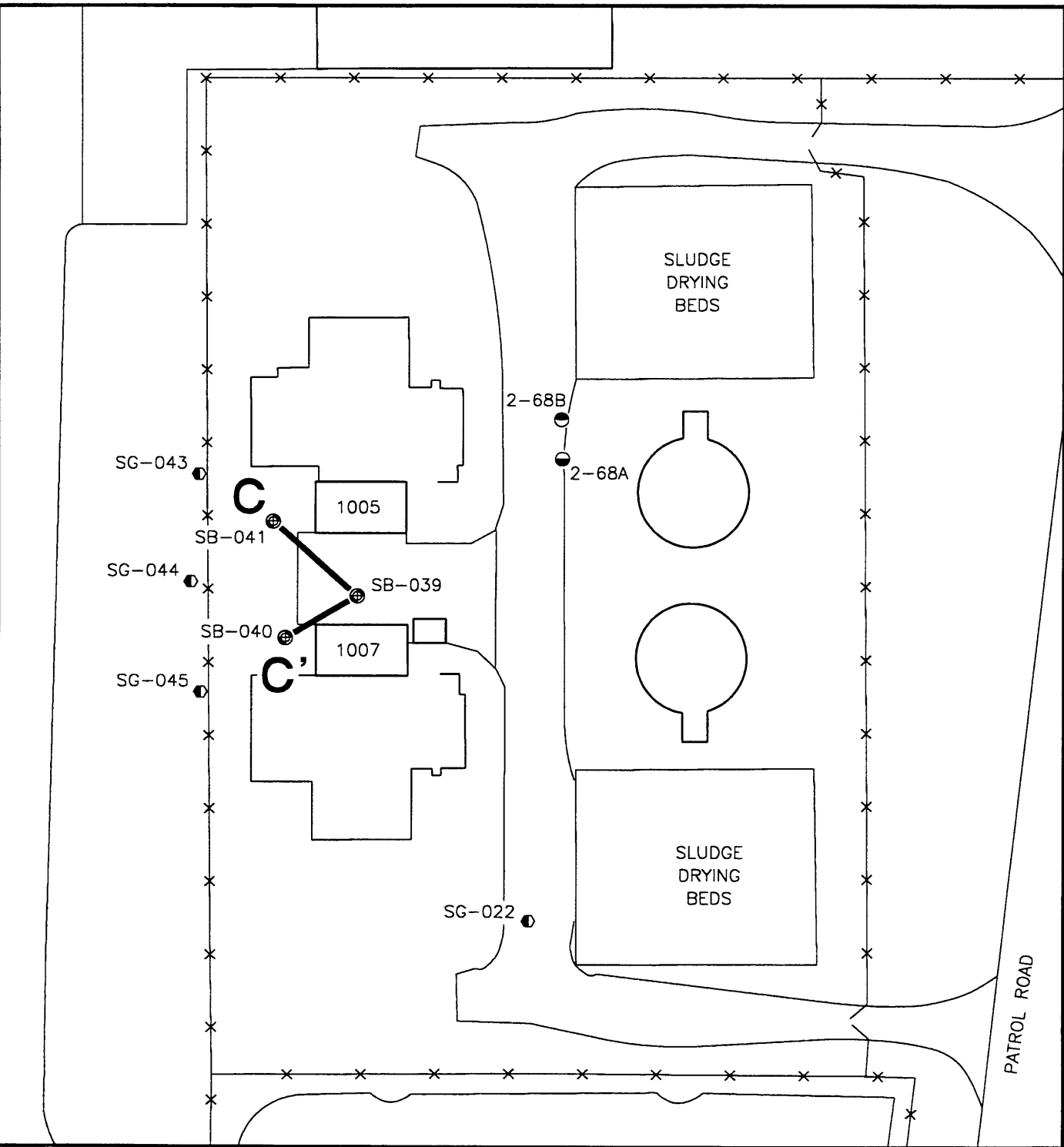
During the installation of soil boring SB-040 a soil sample was collected for geotechnical analysis to determine vadose zone properties. A Shelby tube was used to collect a soil core from the boring. The sample was submitted for geotechnical analysis of the following parameters: grain-size distribution, moisture content, cation exchange capacity (CEC), and vertical permeability. Certificates of analysis are provided as Appendix E. The analytical results are summarized as follows:

Sample Number	J5420
Sample Location	Soil Boring SB-040
Sample Depth (feet)	-11.5 to -12.5
Vertical Permeability (cm/sec)	4.7×10^{-9}
Moisture Content (percent)	17.9
CEC (MEQ/100 grams)	17.96
Particle Size Distribution	See Appendix F graph

5.3.3 Groundwater Characterization

During the RFI at the OPSA no groundwater samples were collected, therefore no information regarding groundwater quality is available from this investigation. The three soil borings

DRAWING NUMBER	409832-A113	
	APPRV. BY	
PROJ. CHK		
DRAFT CHK		
JEA 1/28/94		
DRAFT BY		



Map Source: TINKER AFB

LEGEND

SB-040	SOIL BORING LOCATION AND IDENTIFICATION NUMBER
SG-045	SOIL VAPOR SURVEY POINT AND IDENTIFICATION NUMBER
2-68A	DEEP MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
2-68B	SHALLOW MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
×	FENCE
—	LINE OF CROSS-SECTION

FIGURE 5-2
OLD PESTICIDE STORAGE AREA
SITE MAP
CROSS-SECTION C-C' LOCATION

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OKLAHOMA

Do Not Scale This Drawing

DRAFT	JEA	DRAFT	PROJ.	APPRV.	DRAWING
BY	1/28/94	CHK	CHK	BY	NUMBER
					409832-B4

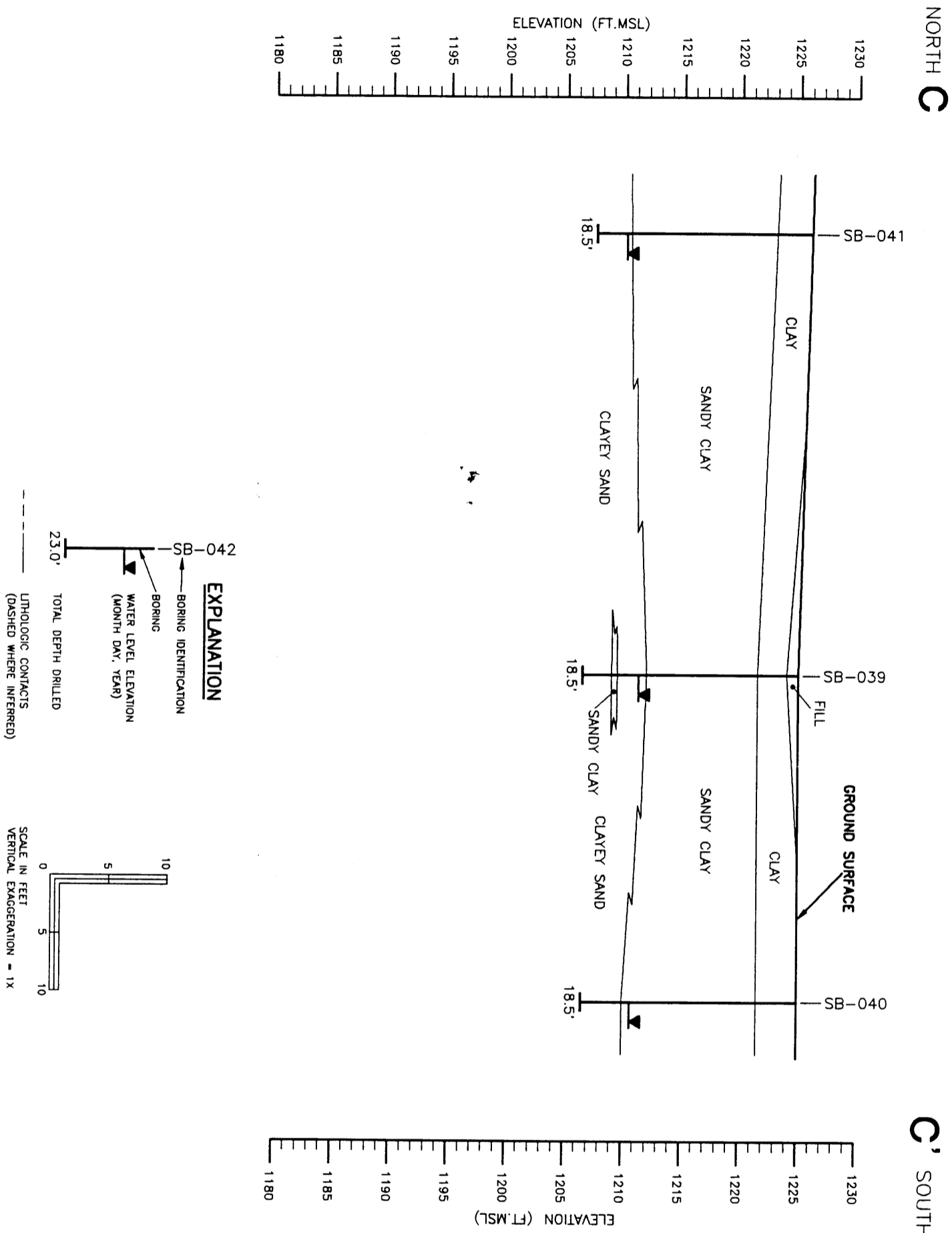


FIGURE 5-3
CROSS-SECTION C-C'
OLD PESTICIDE STORAGE AREA
PREPARED FOR
TINKER AFB
OKLAHOMA

drilled at the OPSA were advanced down to the top of the first water encountered. The depth to water in the borings as documented by the site geologist from boring logs ranged from 13.7 feet below ground surface to 15.9 feet below ground surface.

6.0 Potential Receptors

A specific potential human and ecological receptor search has not been performed for the OPSA. Data are available in the form of chemical analysis of soils and soil gas and current uses of this site and media, and can be used to initiate a potential receptors search. The following narrative outlines the data available to begin identification of potential receptors.

6.1 Human Receptors

Tinker AFB is situated on a relatively flat expanse of grassland. Prior to the development of the Base, the area was characterized by large tracts of agricultural land. The Base currently occupies approximately 5,000 acres of semi-improved and unimproved grounds that are used for the airfield, golf course, housing area, offices, shops, and other uses characteristic of military installations.

The Garber-Wellington aquifer, which underlies Tinker AFB, is the single most important source of potable groundwater in the Oklahoma City area. The recharge area for the Garber-Wellington aquifer covers the eastern half of Oklahoma County, including Tinker AFB. Approximately 75 percent of the Base's water supply is obtained from production wells pumping from this aquifer. Industrial operations, individual homes, farm irrigation, and small communities not served by municipal distribution systems also depend on the Garber-Wellington aquifer. Communities, such as Oklahoma City, presently depending upon surface water supplies also maintain a well system drilled into this aquifer as a standby source of water in the event of drought. Lake Stanley Draper, a local surface water supply reservoir with a small portion of its drainage basin within the boundaries of Tinker AFB, serves a significant recreational function as well.

In 1989, approximately 26,000 military and civilian personnel worked at Tinker AFB. Of these, approximately 2,722 personnel occupied on-Base housing, which consisted of 530 family housing units and seven dormitories. At that time, 1,262 of these residents were children. Military personnel and their families who reside on Base represent the nearest receptors to releases from Tinker AFB.

The OPSA site is currently fenced and access to the area is restricted. In addition, no site personnel currently work in the area of the OPSA. Water well No. 6, the only well in the vicinity of OPSA, is no longer in use and has been plugged.

The current land use at and near the Base is not expected to change because the facilities have decades of useful life remaining and the Base has an important and continuing mission. However, other future land use scenarios and any human receptors associated with those scenarios may need to be considered.

6.2 Ecological Receptors

Tinker AFB lies within a grassland ecosystem, which is typically composed of grasses, forbes, and riparian (i.e., trees, shrubs, and vines associated with water courses) vegetation. This ecosystem has generally experienced fragmentation and disturbances as result of urbanization and industrialization at and near the Base. While no threatened or endangered plant species occur on the Base, the Oklahoma penstemon (*Penstemon oklahomensis*), identified as a rare plant under the Oklahoma Natural Heritage Inventory Program, thrives in several locations on Base. Tinker AFB policy considers rare species as if they were threatened or endangered and provides the same level of protection for these species.

In general, wildlife on the Base is typically tolerant of human activities and urban environments. No federal threatened or endangered species have been reported at the Base. However, one specie found on the Base, the Texas horned lizard (*Phrynosoma cornutum*), is a Federal Category 2 candidate specie and under review for consideration to be listed as threatened or endangered. Air Force policy (AFR 126-1) considers candidate species as threatened or endangered and provides the same level of protection.

The Oklahoma Department of Wildlife Conservation also lists several species within the state as Species of Special Concern. Information on these species suggests declining populations but information is inadequate to support listing, and additional monitoring of populations is needed to determine the species status. These species also receive protection by Tinker AFB as threatened or endangered species. Of these species, the Swainson's hawk (*Buteo swainsoni*) and the burrowing owl (*Athene cunicularia*) have been sighted on Tinker AFB. The Swainson hawk, a summer visitor and prairie/meadow inhabitant has been encountered Basewide. The burrowing owl has been known to inhabit the Air Field at the Base.

7.0 Action Levels

An "action level" is defined by EPA in proposed rule 40 CFR 264.521 (55 FR 30798; 7/27/90), "Corrective Action for Solid Waste Management Units (SWMU) at Hazardous Waste Management Facilities," as a health- and environment-based level, determined by EPA to be an indicator for protection of human health and the environment. In the preamble to this proposed rule, the focus of the RFI phase is defined as "characterizing the actual environmental problems at the facilities." As part of this characterization, a comparison of the contaminant concentrations to certain action levels should be made to determine if a significant release of hazardous constituents has occurred. This comparison is then used to determine if further action or corrective measures are required for a SWMU or an AOC. The preamble to the proposed rule states that the concept of action levels was introduced because of the need for "a trigger that will indicate the need for a Corrective Measures Study (CMS) and below which a CMS would not ordinarily be required" (55 FR 30798; 7/27/90). If constituent concentrations exceed certain action levels at a SWMU or an AOC, further action or a CMS may be warranted; if constituent concentrations are below action levels, a finding of no further action may be warranted. This chapter of the report presents the initial analytical data as compared to certain potential action levels.

Action levels are concentrations of contaminants at or below which exposure to humans or the environment should not produce acute or chronic effects.

The action level information is presented in this chapter so that a constituent concentration at a sample location can be compared with its potential action level. Only constituents identified in the analysis are listed in the AOC, OPSA table. Table 7-1 shows the action levels for soil, as published in federal or state regulations, policies, guidance documents, or proposed rules.

The action levels listed in Table 7-1 are:

- ***SWMU Corrective Action Levels (CAL)*** - The first set of action levels provided in the table are those taken from the proposed rule (40 CFR 264.521) and provided as Appendix A to the rule as "Examples of Concentrations Meeting Criteria for Action Levels." These levels are health-risk based and are provided as specific examples of levels below which corrective action would not be required.

Table 7-1
Action Levels
AOC, OPSA, Tinker AFB

Parameters	SWMU CAL ^a	USGS ^b Background	SB-039	SB-040	SB-041
	Soil (mg/kg)	Soil (mg/kg)	Range (mg/kg)	Range (mg/kg)	Range (mg/kg)
Organics					
Acetone	8000		0.0094-0.130		
Inorganics					
Aluminum		89,000	7400-13000	8300-15000	5800-13000
Arsenic	80	21	1.8-3.3	1.6-11	1.2-3.9
Barium	4000	6400	390-760	150-760	210-930
Beryllium	0.2	3	1.2-2.4	1.5-1.9	0.50-0.92
Cadmium	40	<2	0.26-1.3	0.10-0.98	0.57-1.5
Chromium		110	11-14	10-14	8.8-16
Chromium VI	4.0 x 10 ²	<0.5 ^c	0.11-0.26		
Copper		59	6.0-8.3	7.8-11	5.8-9.3
Iron		58,000	8000-16000	9400-12000	6500-16000
Lead		27	4.6-8.5	4.6-27	4.9-11
Mercury	20	<0.024 ^c	0.027		
Nickel	2000	61	9.3-16	11-28	9.8-15
Silver	200	<2	0.023-0.50	0.079-0.69	0.33-0.67
Zinc		79	15-18	15-21	15-21

^aCAL - Corrective Action Levels.

^bUSGS - United States Geological Survey.

^cSite Background - Where available, site background concentrations are listed.

- **USGS Background** - These values are provided from the USGS report titled "Elemental Composition of Surficial Materials from Central Oklahoma" (USGS, 1991). These values represent the levels of metals which naturally occur in Central Oklahoma soils.
- **Background** - These levels are provided where background could be determined. Where available, background concentrations are listed for metals in soil samples taken on site, which were thought to be unaffected by releases from a unit.

Table 7-1 also gives a brief comparative evaluation of the data collected and the related action levels. The data for each detected compound are compared with the appropriate action level in order to identify those constituents (compounds) with concentrations exceeding the action levels. This identification of the compounds above the action levels provides an indication of a potential environmental problem at a specific site. In addition, this information indicates whether there is a need for conducting a CMS so that a corrective action can be implemented/undertaken at the site.

The data included in Table 7-1 are representative of the data presented in Chapter 5.0. For each soil boring, a range was identified and used in the comparison to the action levels. For the groundwater samples, the results for the most recent sampling event were included in Table 7-1.

Evaluation of the soil data for the OPSA shows that chromium VI and mercury were detected above the USGS and SDB background concentrations but below the action levels. Acetone was also detected in the soil, but the maximum value is below the action levels. Groundwater samples were not taken at this site.

8.0 Summary and Conclusions

8.1 Summary

A Phase I RFI was conducted at the OPSA to determine the presence or absence of contamination that may have resulted from operations associated with the storing and mixing of pesticides. During the RFI performed at the OPSA, a total of 13 soil samples were collected from the three soil borings drilled for chemical analysis. The analysis included VOCs, SVOCs, and metals (aluminum, arsenic, barium, beryllium, cadmium, chromium, chromium VI, copper, iron, lead, mercury, nickel, silver, and zinc). A soil gas survey consisting of three vapor gas survey points situated west of the OPSA was performed. A geotechnical sample was collected and analyzed for grain-size distribution, moisture content, CEC, and vertical permeability.

Chromium VI was detected at a maximum concentration of 0.26 mg/kg. This chromium VI detection is below SWMU CAL.

Mercury was detected at a maximum concentration of 0.027 mg/kg. This mercury concentration is below SWMU CAL.

Acetone was detected at a concentration of 130 mg/kg. This acetone concentration is below SWMU CAL.

8.2 Conclusions

The Phase I RFI conducted at the OPSA indicated that the soil samples collected from the three soil borings drilled resulted in concentrations of organics below SWMU CAL and of metals below or slightly above the USGS background data for the region and below SWMU CAL. The analytical results indicate that no impacts to the environment are present at the OPSA. Groundwater was not sampled during the investigation, thus no information regarding groundwater quality was available for the site.

Geotechnical analysis of the soil sample(s) as discussed in Section 5.2.1 suggests that in general, near surface soils are fine grained (primarily silt and clay) with relatively low vertical permeability. The low permeability soils limit infiltration of surface water, which inhibits transport of contaminants to the subsurface. If appropriate, additional geotechnical samples will be collected within contaminant source areas delineated during the Phase II field

investigation. If warranted, geotechnical data will be evaluated to determine flow and transport within the vadose zone after the completion of Phase II activities.

9.0 Recommendations for Additional Work

Based on evaluations of available data, there is no evidence of contamination at the OPSA; therefore, no corrective measures are presently recommended. Because no groundwater data have been collected from this site, it is recommended that before the OPSA is closed as an AOC, groundwater data should be collected to support conclusions or recommendations made for site closure. During the Phase II RFI, downgradient monitoring wells should be installed to monitor the shallow Hennessey groundwater in the immediate vicinity of the OPSA.

Site-specific soil background samples were not collected, nor were the soil background values available for inclusion in this Phase I RFI report. Therefore, it is recommended that site-specific soil samples from uncontaminated areas be collected for analysis during the Phase II RFI field work. This additional information along with the USGS background values should be used in the Phase II report to distinguish site-related from background concentrations in a statistically significant manner.

10.0 References

- Bingham, R. H. and R. L. Moore, 1975, *Reconnaissance of the Water Resources of the Oklahoma City Quadrangle, Central Oklahoma*, Oklahoma Geological Survey, Hydrologic Atlas 4.
- CDM Federal Programs Corporation (CDM), 1992, *RCRA Facility Investigation Work Plan, Tinker AFB, Oklahoma*, December 1992.
- Engineering Science (ES), 1982, Records Search, *Installation Restoration Program (IRP), Phase I, Final Report, Tinker AFB, Oklahoma*.
- FR, Vol. 55, No. 128, Tuesday, July 3, 1991.
- IT Corporation, 1993a, Final RFI Work Plan - Amendments.
- IT Corporation, 1993b, *Data Collection Quality Assurance Plan Amendment, RCRA Facility Investigation Work Plan*, prepared for Tinker AFB, Oklahoma, October 1993.
- Radian Corporation, 1985a, *Installation Restoration Program, Phase II, Stage 1, Confirmation/Quantification Report, Tinker AFB, Oklahoma*, Final Report, September 1985.
- Radian Corporation, 1985b, *Installation Restoration Program, Phase II, Stage 2, Confirmation/Quantification Report, Tinker AFB, Oklahoma*, Final Report, October 1985.
- Tinker AFB, 1993, *Initial Site Characterization/Closure Report, Underground Storage Tanks 932 A and B, Tinker AFB, Oklahoma*, March 1993.
- Tinker AFB, 1992, *Description of Current Conditions, Tinker AFB, Oklahoma*, December 1992.
- U.S. Geological Survey (USGS), 1992, Hydrologic Atlas.
- U.S. Geological Survey (USGS), 1991, *Elemental Composition of Surficial Materials from Central Oklahoma*, Denver, Colorado
- U.S. Geological Survey (USGS), 1978.
- Wickersham, G., 1979, *Groundwater Resources of the Southern Part of the Garber-Wellington Groundwater Basin in Cleveland and Southern Oklahoma Counties and Parts of Pottawatomie County, Oklahoma*, Oklahoma Water Resources Board, Hydrologic Investigations Publication 86.
- Wood, P. R. and L. C. Burton, 1968, *Ground-Water Resources: Cleveland and Oklahoma Counties*, Oklahoma Geological Survey, Circular 71, Norman, Oklahoma, 75 p.

APPENDIX A

BORING LOGS

Client: TINKER AFB
Project Name: TINKER 5001

Project Location: TINKER AFB, OKLAHOMA
Project Number: 409832

SOIL BORING SB-039

DRILLING AND SAMPLING INFORMATION

Boring Location: OLD PESTICIDE STORAGE AREA, SURFACE ELEV.(FT): 1225.186
BETWEEN BUILDING 1005 AND 1007 TOTAL DEPTH(FT.): 18.5
Logged By: K. KIRSCHENMANN Date Started: 10/25/93
Drilled By: P. GUERREIN Date Completed: 10/25/93
GEOTECHNOLOGY, INC.
Drill Rig Type: CME-75
Drilling Method: 8" HOLLOW STEM AUGER

Sampling Method: 3"x5' CONTINUOUS SAMPLER AND
2"x2' SPLIT SPOON

Notes: N 153410.174, E 2177198.420

DESCRIPTION	SAMPLE TYPE SAMPLE NO.	IN. DRIVEN IN. RECOVERED	PID, PPM	USCS	GRAPHIC LOG	DEPTH IN FEET
<u>FILL</u>		42				
<u>CLAY</u> - slightly plastic; 10% fine grained sand; firm; slightly moist; dark gray (10YR-4/1); sharp contact	A 1046	30	0.1	cl		
<u>SANDY CLAY</u> - slightly plastic; 10% to 20% fine grained sand; stiff; slightly moist; red (2.5YR-5/6); gradational contact		60		cl		5
- firm	A 1047	60	0.1			
- moderately plastic; moist; dark red (2.5YR-4/8)		60				10
- 20% fine grained sand; soft	A 1048	60	0.1			
<u>CLAYEY SAND</u> - 70% to 75% fine to medium grained sand; soft; very moist; dark red (2.5YR-4/8); gradational contact		60		sc		15
- 30% clay, 70% fine grained sand; compact; wet	A 1049	60	0.1	cl		
<u>SANDY CLAY</u> - slightly plastic; 25% to 30% fine grained sand; firm; slightly moist; dark red (2.5YR-4/8); sharp contact				sc		
<u>CLAYEY SAND</u> - 30% clay, 70% fine grained sand; compact; wet; dark red (2.5YR-4/8); sharp contact		54				
- 70% fine to coarse grained sand at 17'						
TOTAL DEPTH = 18.5 FEET						20
						25
						30
						35
						40

DRAFT
BY

RPS
11/22/93

DRAFT
CHK

PROJ.
CHK

APPRV.
BY

DWG.
NO.

409832-A23
Sheet 1 of 1

Project Location: TINKER AFB, OKLAHOMA
Project Number: 409832

DRILLING AND SAMPLING INFORMATION

TOTAL DEPTH(FT.): 18.5

Date Started: 10/25/93

Date Completed: 10/25/93

Drill Rig Type: CME-75
Drilling Method: 8" HOLLOW STEM AUGER

Notes: N 153395.948, E 2177174.077

DESCRIPTION										SAMPLE TYPE	SAMPLE NO.	IN. DRIVEN	IN. RECOVERED	PID, PPM	USCS	GRAPHIC LOG	DEPTH IN FEET
CLAY - nonplastic; less than 10% fine grained sand; very hard; dry; strong brown (7.5YR-4/6)										A	1050	42	36	0.5	cl		0
SANDY CLAY - slightly plastic; 10% to 20% fine grained sand; very hard; slightly moist; yellowish red (5YR-4/6)										A	1051	60	60	0.1	cl		5
- black nodules - stiff; gradational contact										A	1052	30	30	0.1	cl		10
- moderately plastic; dark red (2.5YR-4/8) - geotech sample (11.5-12.5') - soft; moist										A	1053	30	30	0.1	cl		15
CLAYEY SAND - 60% fine to coarse grained sand; compact; wet; dark red (2.5YR-4/8); gradational contact										A	1054	60	60	0.1	sc		20
TOTAL DEPTH - 18.5 FEET																	25
																	30
																	35
																	40

DRAFT BY

RPS

11/22/93

DRAFT CHK

PROJ. CHK

APPRV. BY

DWG. NO.

409832-A24

Sheet 1 of 1

G:\LINKER\40983202.150

Client: TINKER AFB
Project Name: TINKER 5001




Project Location: TINKER AFB, OKLAHOMA
Project Number: 409832

SOIL BORING SB-041

DRILLING AND SAMPLING INFORMATION

Boring Location: OLD PESTICIDE STORAGE AREA, SURFACE ELEV.(FT.):1226.184
WEST OF BUILDING 1005 TOTAL DEPTH(FT.): 18.5
Logged By: K. KIRSCHENMANN Date Started: 10/26/93
Drilled By: P. GUERREIN Date Completed: 10/26/93
GEOTECHNOLOGY, INC.
Drill Rig Type: CME-75
Drilling Method: 8" HOLLOW STEM AUGER

Sampling Method: 3"x5' CONTINUOUS SAMPLER AND
2"x2' SPLIT SPOON
Notes: N 153435.613, E 2177169.986

DESCRIPTION							SAMPLE TYPE SAMPLE NO.	IN. DRIVEN IN. RECOVERED	PID, PPM	USCS	GRAPHIC LOG	DEPTH IN FEET	
CLAY - nonplastic; less than 10% fine grained sand; hard; dry; very dark grayish brown (2.5YR-3/2)							A 1058	42	0.1	cl			
- slightly plastic; stiff; slightly moist; gradational													
SANDY CLAY - nonplastic; 10% to 20% fine grained sand; stiff; slightly moist; strong brown (7.5YR-4/6); gradational contact							A 1059 A 1060 A 1061	42	0.1	cl		5	
- slightly plastic; hard; dark red (2.5YR-4/8)								60					
- 25% to 30% fine grained sand; firm								60					
- moderately plastic; soft; moist								60					
CLAYEY SAND - 30% to 40% clay; 60% to 70% fine to coarse grained sand; compact; wet; dark red (2.5YR-4/8); gradational contact							A 1061	60	0.1	sc		15	
- 30% clay, 70% coarse to medium grained sand; sharp contact													
TOTAL DEPTH = 18.5 FEET								60				20	
													25
													30
													35
													40
											</		

APPENDIX B
SOIL GAS REPORT

SOIL GAS SURVEY
TINKER AIR FORCE BASE
OKLAHOMA CITY, OKLAHOMA

PREPARED FOR
IT CORPORATION
312 DIRECTORS DRIVE
KNOXVILLE, TENNESSEE 37923

PREPARED BY
TARGET ENVIRONMENTAL SERVICES, INC.
9180 RUMSEY ROAD
COLUMBIA, MARYLAND 21045
(410) 992-6622

DECEMBER 1993

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Quality Assurance/Quality Control (QA/QC) Evaluation	3
Results and Interpretation	3
Fuel Truck Maintenance Area	4
Sludge Drying Beds	4
Old Pesticide Storage Area	5
Conclusions	5

FIGURES

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Figure 1B. Sample Locations Sludge Drying Beds

Figure 1C. Sample Locations Old Pesticide Storage Area

Figure 2. Tetrachloroethene (PCE) Sludge Drying Beds

Figure 3. Total FID Volatiles Sludge Drying Beds

Figure 4. 1,1-Dichloroethene (1,1-DCE) Old Pesticide Storage Area

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Table 2. Analyte Concentrations via GC/ECD

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APPENDIX A - Field Procedures

APPENDIX B - Laboratory Procedures

APPENDIX C - Detectability & Terminology

EXECUTIVE SUMMARY

On November 9-11, 1993, **TARGET Environmental Services, Inc. (TARGET)** conducted soil gas surveys in three areas at **Tinker Air Force Base** in Oklahoma City, Oklahoma. The areas included the Fuel Truck Maintenance Area, Sludge Drying Beds and Old Pesticide Storage Area. A total of 45 soil gas samples were collected from depths of 9 to 10 feet. The samples were analyzed on a gas chromatograph equipped with a flame ionization detector (GC/FID) for petroleum hydrocarbons and an electron capture detector for chlorinated hydrocarbons. The objective of the surveys was to identify potential areas of volatile hydrocarbon contamination at each of the sites through quantitative analysis of the vadose zone soil gas.

GC/FID and GC/ECD analysis of the samples from Fuel Truck Maintenance area revealed that none of the individual petroleum or chlorinated analytes were present in any of the samples.

Low levels of tetrachloroethene (PCE) were present in two samples from the southwestern corner of the Sludge Drying Beds area. None of the remaining chlorinated analytes were present above the 1 µg/l reporting limit in any of the samples. GC/FID analysis revealed only a very low level of Total FID Volatiles in a sample from the northern survey boundary. None of the individual petroleum analytes were present above the 1 µg/l reporting limit in this or any other sample from this site. Soil gas data does not suggest the presence of a significant petroleum hydrocarbon contamination problem in the Sludge Drying Beds area.

GC/ECD analysis revealed only a low level of 1,1-dichloroethene (1,1-DCE) in one sample from the Old Pesticide Storage Area. GC/FID analysis revealed that none of the individual petroleum analytes were present above the 1 µg/l reporting limit in any of the samples from this area.

Introduction

IT Corporation (IT) contracted Target Environmental Services, Inc. (TARGET) to perform soil gas surveys in three areas of Tinker Air Force Base in Oklahoma City, Oklahoma. The areas included the Fuel Truck Maintenance Area, Sludge Drying Beds and Old Pesticide Storage Area. The objective of the surveys was to identify potential areas of volatile hydrocarbon contamination at each of the sites through quantitative analysis of the vadose zone soil gas.

The surveys were designed by IT to cover the areas of concern with a total of 45 samples. Sixteen (16) samples were allocated to the Fuel Truck Maintenance Area, 26 to the Sludge Drying Beds and 3 to the Old Pesticide Storage Area. Additional information was not provided. A 10-foot sampling depth was planned. The field phase of the soil gas surveys was conducted on November 9-11, 1993.

Sample Collection and Analysis

Soil gas samples were collected at a total of 45 locations at the site, as shown in Figures 1A through 1C. Sixteen (16) samples were collected from the Fuel Truck Maintenance Area (Figure 1A), 26 from the Sludge Drying Beds (Figure 1B) and 3 from the Old Pesticide Storage Area (Figure 1C). Samples 2 and 7 from the Fuel Truck Maintenance Area were collected from a depth of 9 feet due to probe refusal. All remaining samples were collected from a depth of 10 feet. A detailed explanation of the sampling procedure is provided in Appendix A.

All of the samples collected during the field phase of the survey were subjected to dual analyses. One analysis was conducted according to EPA Method 8010 (modified) on a gas chromatograph equipped with an electron capture detector (ECD), and using direct injection.

Specific analytes standardized for this analysis were:

1,1-dichloroethene (11DCE)
 methylene chloride (CH_2Cl_2)
 trans-1,2-dichloroethene (t12DCE)
 1,1-dichloroethane (11DCA)
 cis-1,2-dichloroethene (c12DCE)
 chloroform (CHCl_3)
 1,1,1-trichloroethane (111TCA)
 carbon tetrachloride (CCl_4)
 trichloroethene (TCE)
 1,1,2-trichloroethane (112TCA)
 tetrachloroethene (PCE)

The chlorinated hydrocarbons in this suite were chosen because of their common usage in industrial solvents, and/or their degradational relationship to commonly used compounds.

The second analysis was conducted according to EPA Method 8020 (modified) on a gas chromatograph equipped with a flame ionization detector (FID), and using direct injection. The analytes selected for standardization in this analysis were:

benzene
 toluene
 ethylbenzene
 meta- and para- xylene
 ortho- xylene

These compounds were chosen because of their utility in evaluating the presence of fuel products, or petroleum based solvents. An explanation of the laboratory procedures is provided in Appendix B.

The tabulated results of the laboratory analyses of the soil gas samples are reported in micrograms per liter ($\mu\text{g/l}$) in Tables 1 and 2. Although "micrograms per liter" is equivalent to "parts per billion (v/v)" in water analyses, they are not equivalent in gas analyses, due to the difference in the mass of equal volumes of water and gas matrices. The xylenes concentrations

reported in Table 1 are the sum of the m- and p-xylene and the o-xylene concentrations for each sample.

Quality Assurance/Quality Control (QA/QC) Evaluation

Field QA/QC Samples

Field control samples were collected at the beginning and end of each day's field activities. These QA/QC samples were obtained by filtering ambient air through a dust and organic vapor filter cartridge and encapsulating as described in the "Field Procedures" in Appendix A. The laboratory results are reported in Tables 1 and 2. Concentrations of all analytes were below the reporting limit in all field control samples, indicating that the QA/QC measures employed were sufficient to prevent cross-contamination of the samples during collection.

Laboratory QA/QC Samples

To document analytical repeatability, a duplicate analysis was performed on every tenth field sample. Laboratory blanks of nitrogen gas were also analyzed after every tenth field sample. The results of these analyses are reported in Tables 1 and 2. The duplicate analyses were within acceptable limits. Concentrations of all analytes were below the reporting limit in all laboratory blanks.

Results and Interpretation

In order to provide graphic presentation of the results, selected individual data sets in Tables 1 and 2 have been mapped and contoured to produce Figures 2 through 4. Dashed contours are used where patterns are extrapolated into areas of less complete data, or as auxiliary contours. Map sample points with no data shown indicate that the analyte concentrations in the sample

were below the reporting limit. An explanation of the terminology used in this report is provided in Appendix C. Each of the three sites is discussed separately below.

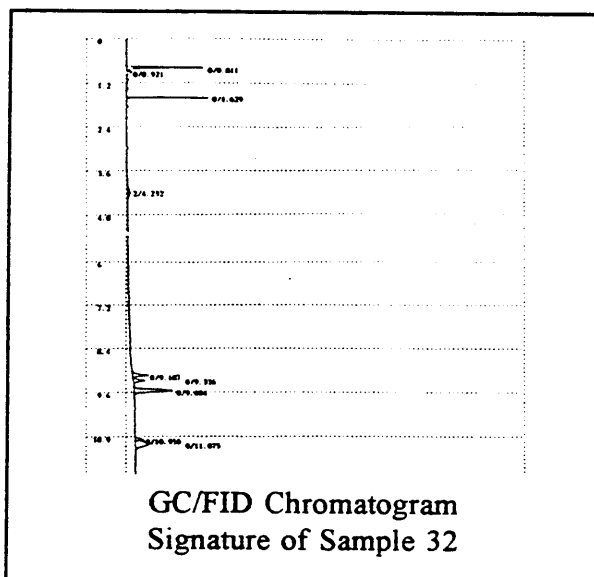
Fuel Truck Maintenance Area

GC/FID and GC/ECD analysis of the samples from this area revealed that none of the individual petroleum or chlorinated analytes were present in any of the samples.

Sludge Drying Beds

GC/ECD analysis revealed low levels of tetrachloroethene (PCE, Figure 2) in Samples 20 and 22, from the southwestern corner of the survey area. None of the remaining chlorinated analytes were present above the 1 µg/l reporting limit in any of the samples.

GC/FID analysis revealed only a very low level of Total FID Volatiles (Figure 3) in Sample 32, from the northern survey boundary. None of the individual petroleum analytes were present above the 1 µg/l reporting limit in this or any other sample from this site. The FID



chromatogram signature of Sample 32 (left) reveals a few small late-eluting peaks which represent unidentified hydrocarbons of relatively low volatility. The very low concentration of hydrocarbons represented by these peaks does not suggest the presence of a significant petroleum hydrocarbon contamination problem in this area.

Old Pesticide Storage Area

GC/ECD analysis revealed a low level of 1,1-dichloroethene (1,1-DCE, Figure 4) in Sample 45. None of the remaining chlorinated analytes were present above the 1 µg/l reporting limit in any of the samples.

GC/FID analysis revealed that none of the individual petroleum analytes were present above the 1 µg/l reporting limit in any of the samples.

Conclusions

- ▶ Petroleum and chlorinated hydrocarbon contamination was not present in the Fuel Truck Maintenance Area.
- ▶ Tetrachloroethene (PCE) was present near the southwestern corner of the Sludge Drying Beds Area. The very low level of petroleum hydrocarbons observed at the northern boundary of this area does not suggest the presence of significant petroleum-related contamination.
- ▶ 1,1-Dichloroethene (1,1-DCE) was present in the Old Pesticide Storage Area.

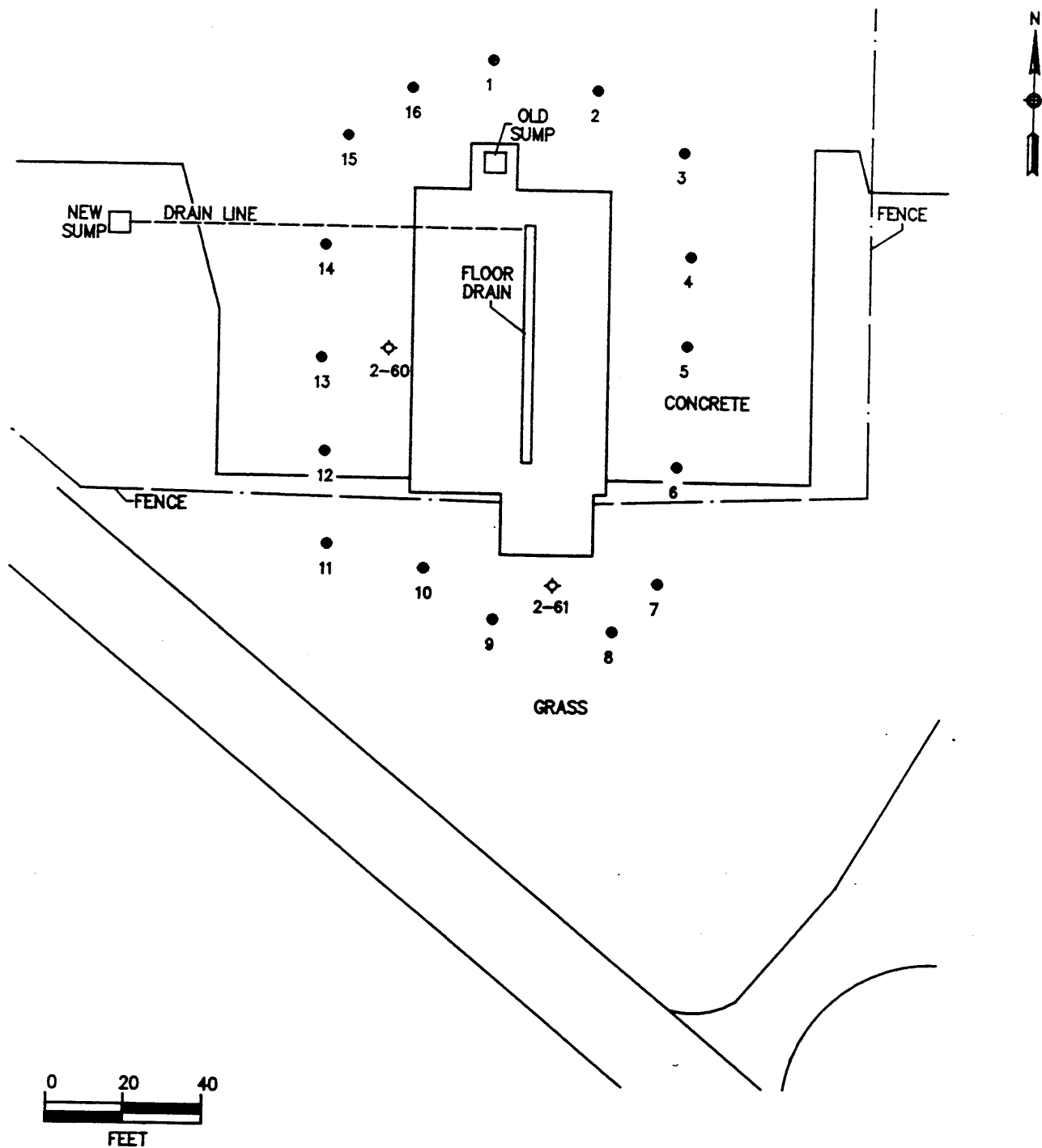


FIGURE 1A. Sample Locations



TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report
and should be viewed in that context.

TINKER AIR FORCE BASE
FUEL TRUCK MAINTENANCE AREA
OKLAHOMA CITY, OKLAHOMA

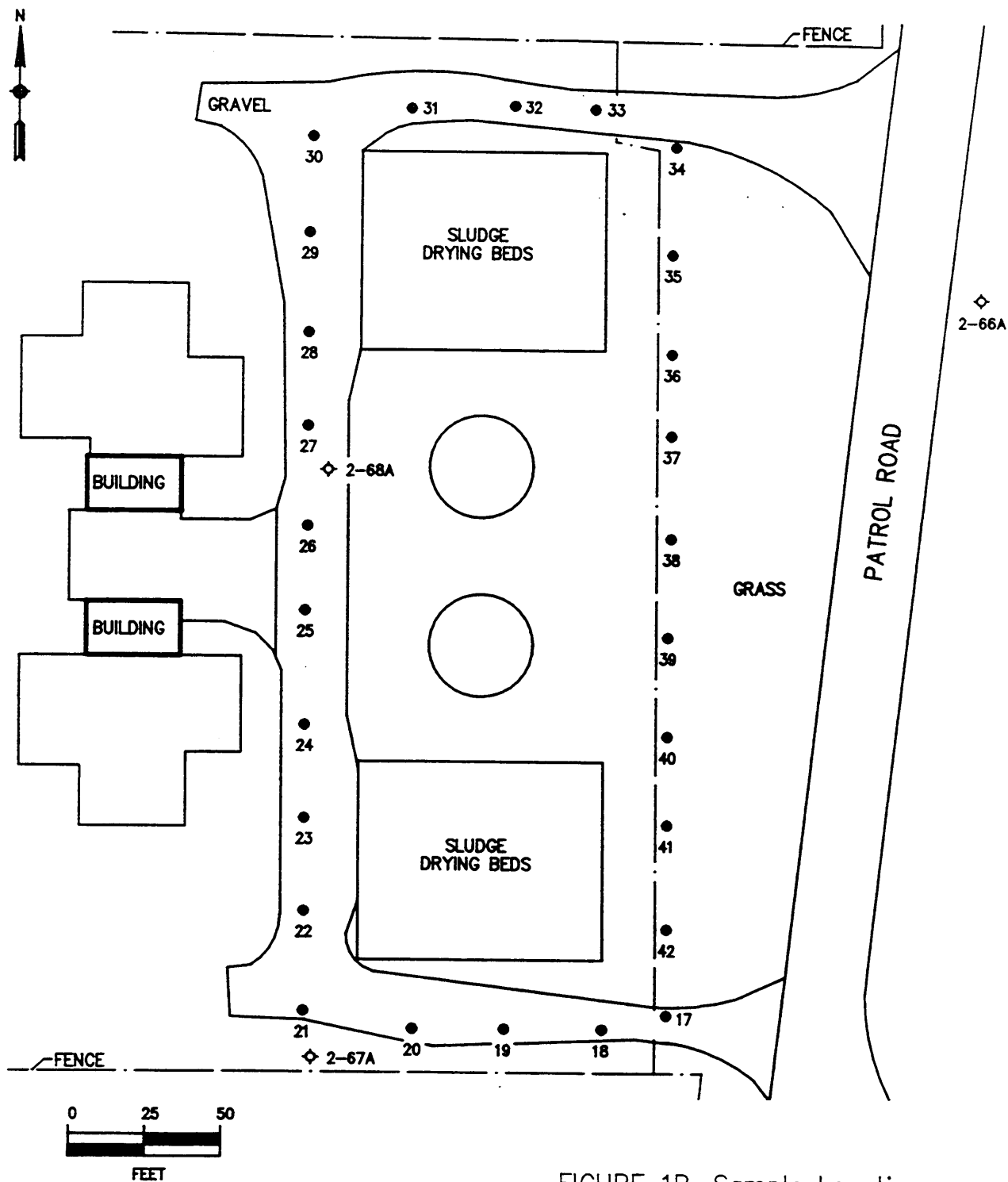


FIGURE 1B. Sample Locations



This map is integral to a written report
and should be viewed in that context.

TINKER AIR FORCE BASE
SLUDGE DRYING BEDS
OKLAHOMA CITY, OKLAHOMA

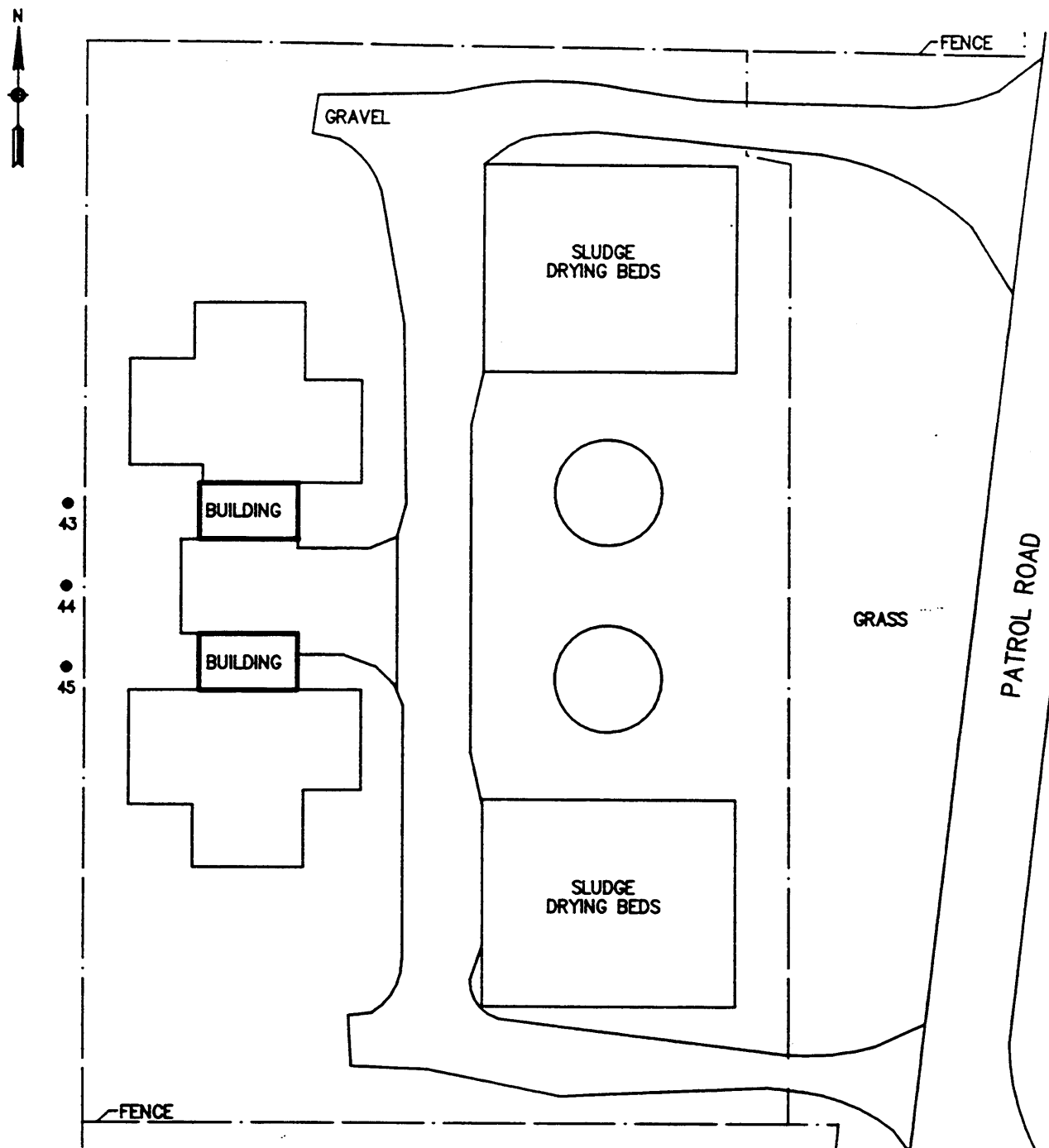


FIGURE 1C. Sample Locations

● SOIL GAS SAMPLE LOCATION



TARGENT ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report
and should be viewed in that context.

TINKER AIR FORCE BASE
OLD PESTICIDE STORAGE AREA
OKLAHOMA CITY, OKLAHOMA

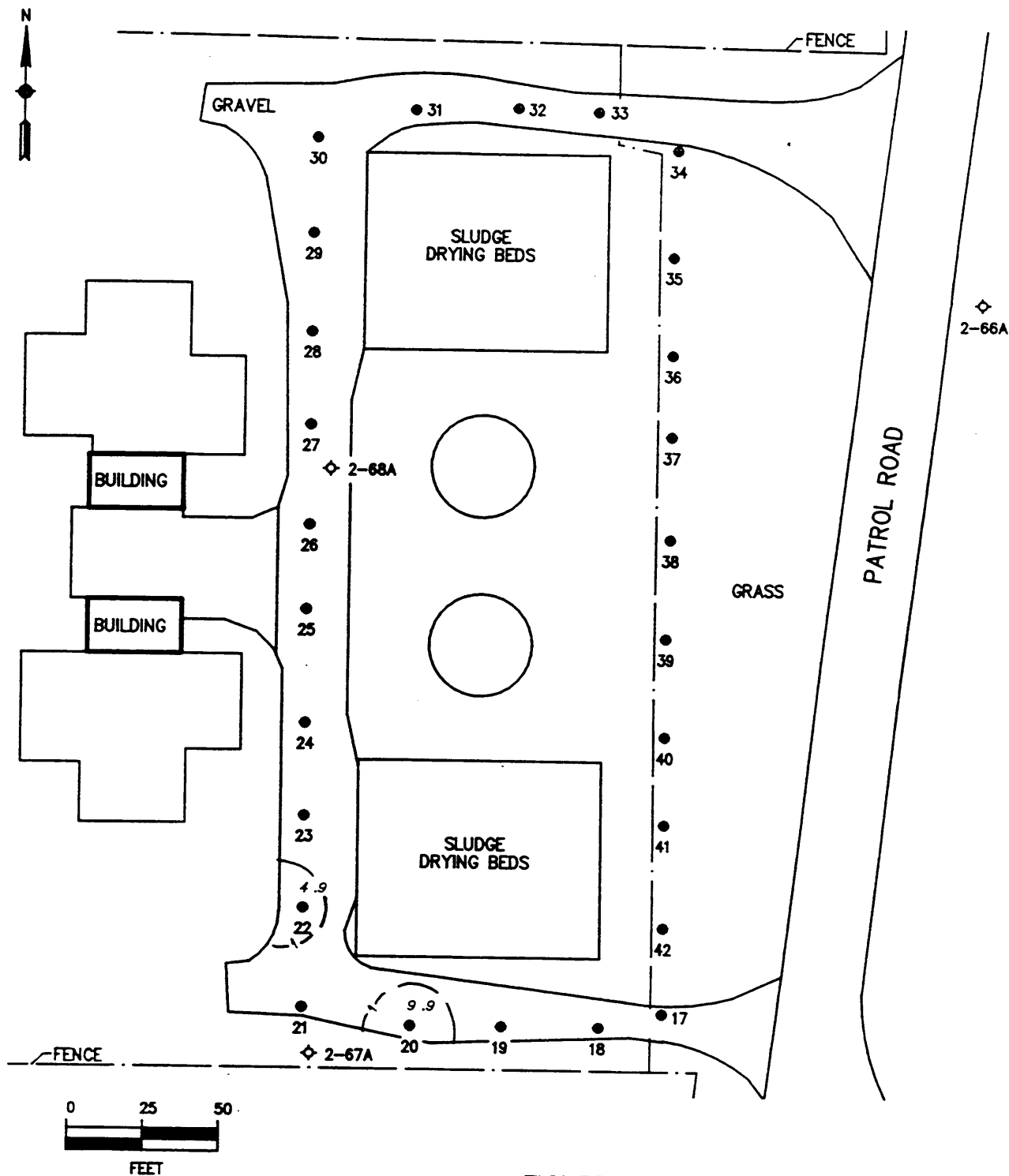


FIGURE 2. Tetrachloroethene (PCE)
($\mu\text{g/l}$)



TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report
and should be viewed in that context.

TINKER AIR FORCE BASE
SLUDGE DRYING BEDS
OKLAHOMA CITY, OKLAHOMA

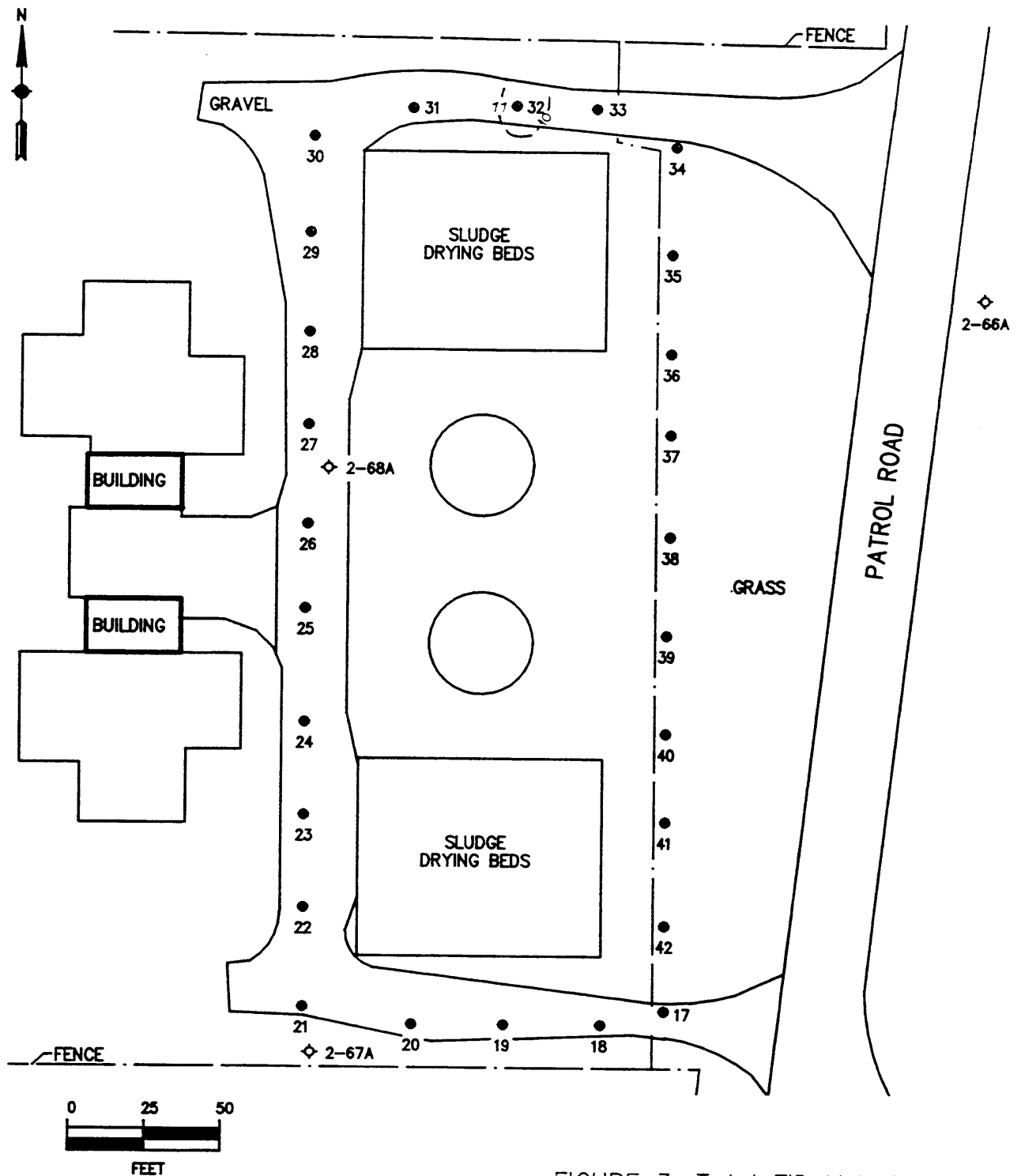


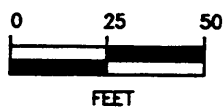
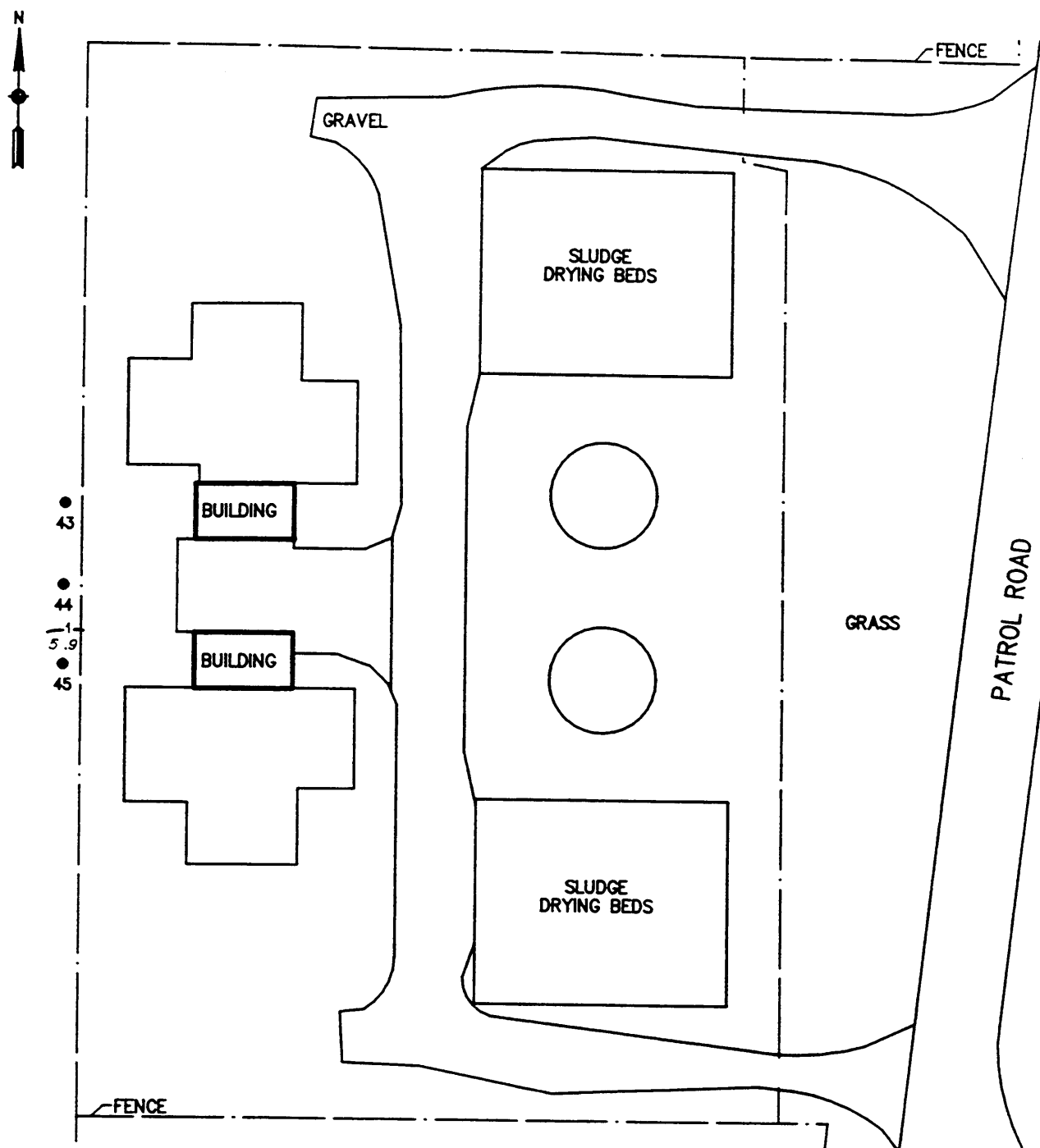
FIGURE 3. Total FID Volatiles
(calc'd $\mu\text{g/l}$)



TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report
and should be viewed in that context.

TINKER AIR FORCE BASE
SLUDGE DRYING BEDS
OKLAHOMA CITY, OKLAHOMA



● SOIL GAS SAMPLE LOCATION



TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report
and should be viewed in that context.

FIGURE 4. 1,1-dichloroethene (1,1-DCE)
($\mu\text{g/l}$)

TINKER AIR FORCE BASE
OLD PESTICIDE STORAGE AREA
OKLAHOMA CITY, OKLAHOMA

TABLE 1**ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)**

SAMPLE	BENZENE	TOLUENE	ETHYL- BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT	1.0	1.0	1.0	1.0	10
1	<1.0	<1.0	<1.0	<1.0	<10
2	<1.0	<1.0	<1.0	<1.0	<10
3	<1.0	<1.0	<1.0	<1.0	<10
4	<1.0	<1.0	<1.0	<1.0	<10
5	<1.0	<1.0	<1.0	<1.0	<10
6	<1.0	<1.0	<1.0	<1.0	<10
7	<1.0	<1.0	<1.0	<1.0	<10
8	<1.0	<1.0	<1.0	<1.0	<10
9	<1.0	<1.0	<1.0	<1.0	<10
10	<1.0	<1.0	<1.0	<1.0	<10
11	<1.0	<1.0	<1.0	<1.0	<10
12	<1.0	<1.0	<1.0	<1.0	<10
13	<1.0	<1.0	<1.0	<1.0	<10
14	<1.0	<1.0	<1.0	<1.0	<10
15	<1.0	<1.0	<1.0	<1.0	<10
16	<1.0	<1.0	<1.0	<1.0	<10
17	<1.0	<1.0	<1.0	<1.0	<10
18	<1.0	<1.0	<1.0	<1.0	<10
19	<1.0	<1.0	<1.0	<1.0	<10
20	<1.0	<1.0	<1.0	<1.0	<10
21	<1.0	<1.0	<1.0	<1.0	<10
22	<1.0	<1.0	<1.0	<1.0	<10
23	<1.0	<1.0	<1.0	<1.0	<10
24	<1.0	<1.0	<1.0	<1.0	<10
25	<1.0	<1.0	<1.0	<1.0	<10
26	<1.0	<1.0	<1.0	<1.0	<10
27	<1.0	<1.0	<1.0	<1.0	<10
28	<1.0	<1.0	<1.0	<1.0	<10
29	<1.0	<1.0	<1.0	<1.0	<10
30	<1.0	<1.0	<1.0	<1.0	<10
31	<1.0	<1.0	<1.0	<1.0	<10
32	<1.0	<1.0	<1.0	<1.0	11
33	<1.0	<1.0	<1.0	<1.0	<10

* CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 1 (CONT.)**ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)**

SAMPLE	BENZENE	TOLUENE	ETHYL- BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING	1.0	1.0	1.0	1.0	10
LMT					
34	<1.0	<1.0	<1.0	<1.0	<10
35	<1.0	<1.0	<1.0	<1.0	<10
36	<1.0	<1.0	<1.0	<1.0	<10
37	<1.0	<1.0	<1.0	<1.0	<10
38	<1.0	<1.0	<1.0	<1.0	<10
39	<1.0	<1.0	<1.0	<1.0	<10
40	<1.0	<1.0	<1.0	<1.0	<10
41	<1.0	<1.0	<1.0	<1.0	<10
42	<1.0	<1.0	<1.0	<1.0	<10
43	<1.0	<1.0	<1.0	<1.0	<10
44	<1.0	<1.0	<1.0	<1.0	<10
45	<1.0	<1.0	<1.0	<1.0	<10

FIELD CONTROL SAMPLES

101	<1.0	<1.0	<1.0	<1.0	<10
102	<1.0	<1.0	<1.0	<1.0	<10
103	<1.0	<1.0	<1.0	<1.0	<10
104	<1.0	<1.0	<1.0	<1.0	<10
105	<1.0	<1.0	<1.0	<1.0	<10
106	<1.0	<1.0	<1.0	<1.0	<10

LABORATORY DUPLICATE ANALYSIS

10	<1.0	<1.0	<1.0	<1.0	<10
10R	<1.0	<1.0	<1.0	<1.0	<10
33	<1.0	<1.0	<1.0	<1.0	<10
33R	<1.0	<1.0	<1.0	<1.0	<10
45	<1.0	<1.0	<1.0	<1.0	<10
45R	<1.0	<1.0	<1.0	<1.0	<10
106	<1.0	<1.0	<1.0	<1.0	<10
106R	<1.0	<1.0	<1.0	<1.0	<10
101	<1.0	<1.0	<1.0	<1.0	<10
101R	<1.0	<1.0	<1.0	<1.0	<10

* CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 1 (CONT.)ANALYTE CONCENTRATIONS VIA GC/FID ($\mu\text{g/l}$)

SAMPLE	BENZENE	TOLUENE	ETHYL- BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING	1.0	1.0	1.0	1.0	10
LIMIT					

LABORATORY BLANKS

10B	<1.0	<1.0	<1.0	<1.0	<10
33B	<1.0	<1.0	<1.0	<1.0	<10
45B	<1.0	<1.0	<1.0	<1.0	<10
106B	<1.0	<1.0	<1.0	<1.0	<10
101B	<1.0	<1.0	<1.0	<1.0	<10

* CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 2

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.9
21	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
22	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.9
23	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
26	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
27	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
28	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
29	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
30	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
31	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
32	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene

11DCA = 1,1-dichloroethane

111TCA = 1,1,1-trichloroethane

112TCA = 1,1,2-trichloroethane

CH2Cl2 = methylene chloride

c12DCE = cis-1,2-dichloroethene

CCl4 = carbon tetrachloride

PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene

CHCl3 = chloroform

TCE = trichloroethene

TABLE 2 (CONT.)**ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)**

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	CHCl3	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
33	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
34	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
35	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
36	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
37	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
38	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
39	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
41	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
43	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
44	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
45	5.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

FIELD CONTROL SAMPLES

101	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
102	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
103	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
104	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
105	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
106	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

LABORATORY DUPLICATE ANALYSIS

10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
10R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
33	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
33R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
45	5.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
45R	5.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
 11DCA = 1,1-dichloroethane
 111TCA = 1,1,1-trichloroethane
 112TCA = 1,1,2-trichloroethane

CH2Cl2 = methylene chloride
 c12DCE = cis-1,2-dichloroethene
 CCl4 = carbon tetrachloride
 PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene
 CHCl3 = chloroform
 TCE = trichloroethene

TABLE 2 (CONT.)**ANALYTE CONCENTRATIONS VIA GC/ECD ($\mu\text{g/l}$)**

SAMPLE	11DCE	CH₂Cl₂	t12DCE	11DCA	c12DCE	CHCl₃	111TCA	CCl₄	TCE	112TCA	PCE
REPORTING	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LIMIT											

LABORATORY DUPLICATE ANALYSIS (cont.)

101	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
101R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
106	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
106R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

LABORATORY BLANKS

10B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
33B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
45B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
101B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
106B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
 11DCA = 1,1-dichloroethane
 111TCA = 1,1,1-trichloroethane
 112TCA = 1,1,2-trichloroethane

CH₂Cl₂ = methylene chloride
 c12DCE = cis-1,2-dichloroethene
 CCl₄ = carbon tetrachloride
 PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene
 CHCl₃ = chloroform
 TCE = trichloroethene

FIELD PROCEDURES

Prior to the collection of each sample, the entire sampling system (including down-hole probe, tubing, syringe, and all associated plumbing) was purged with ambient air drawn through an organic vapor filter cartridge. To collect the samples, a van-mounted hydraulic probe was used to advance connected 3-foot sections of 1-inch diameter threaded steel casing down to the sampling depth. Once at depth, the casing was hydraulically raised several inches in order to release a disposable drive point and open the bottom of the casing. A teflon line with a perforated hollow stainless steel probe end was inserted into the casing to the bottom of the hole, and the bottom-hole line perforations were isolated from the up-hole annulus by an inflatable packer. A sample of in-situ soil gas was then withdrawn through the probe and used to purge atmospheric air from the sampling system. A second sample of soil gas was withdrawn through the probe and encapsulated in a pre-evacuated glass vial at two atmospheres of pressure (15 psig). The self-sealing vial was detached from the sampling system, packaged, labeled, and stored for laboratory analysis. All sampling holes were backfilled with bentonite and the surface repaired with like material upon completion of the sampling.

Prior to the day's field activities all sampling equipment and probes were decontaminated by washing with soapy water and rinsing thoroughly. Internal surfaces were flushed dry using pre-purified nitrogen or filtered ambient air, and external surfaces were wiped clean using clean paper towels.

LABORATORY PROCEDURES

The analyses were performed using a research grade gas chromatograph (Shimadzu Model 14A), equipped with capillary columns, thermal oven, Shimadzu CR4A data processor and associated hardware. The GC was equipped with an electron capture detector (ECD) for chlorinated hydrocarbons and a flame ionization detector (FID) for petroleum and non-halogenated compounds. 800 microliters (μ l) of sample was directly injected into the GC using a Shimadzu gas-tight syringe.

The ECD and FID stock standards were purchased from Scott Specialty Gases (Plumsteadville, PA). The concentration of the standard is certified by Scott and is traceable to weights certified by the State of Pennsylvania. The analytical equipment was calibrated using a 3-point instrument-response curve and injection of known concentrations of the target compounds. Retention times of the standards were used to identify the peaks in the chromatograms of the field samples, and their response factors were used to calculate the analyte concentrations.

The standards were prepared by filling a Tedlar bag from a tank containing the stock standards. Vials were evacuated, pressurized with nitrogen and then equilibrated to atmospheric pressure. Aliquots of known quantity were removed from the vials and replaced with the same size aliquot of the standard from the Tedlar bag. The lowest standard concentration was near, but above, the instrument detection limit, the second concentration was within the expected range of concentrations in the field samples, and the third concentration was below the upper linear range of the instrument. Three-point least-squares linear regression calibration curves were generated for each analyte. The correlation coefficients were calculated for each standardized

analyte to ensure that they equalled or exceeded 0.99. The retention time windows were determined by examining the retention times of the three standards. The mid range retention time was selected with a window of ± 0.05 minutes. A check standard was run to confirm the retention times and instrument response no less often than after every 40 samples. Check standards were also run at the beginning of each day and new calibration curves were generated as described above whenever a retention time shift or change in instrument response occurred which caused the concentrations of analytes in the check standards to vary by more than 20% from the original concentrations.

The ECD analysis was conducted at instrument Range 0. The FID analysis was conducted at instrument Range 1. The syringe was cleaned using a purge cycle with UPC nitrogen. The syringe was purged for 10 seconds prior to removal of an aliquot from the sample vial and for 10 seconds after injection of the sample into the GC.

Total FID Volatiles values were generated by summing the areas of all integrated chromatogram peaks and calculated using the instrument response factor for toluene. Injection peaks, which also contain the light hydrocarbon methane, were excluded to avoid the skewing of Total FID Volatiles values due to injection disturbances and biogenic methane. For samples with low hydrocarbon concentrations, the calculated Total FID Volatiles concentration is occasionally lower than the sum of the individual analytes. This is because the response factor used for the Total FID Volatiles calculation is a constant, whereas the individual analyte response factors are compound specific. It is important to understand that the Total FID Volatiles levels reported are relative, not absolute, values.

DETECTABILITY & TERMINOLOGY

Detectability

The soil gas survey data presented in this report are the result of precise sampling and measurement of contaminant concentrations in the vadose zone. Analyte detection at a particular location is representative of vapor, dissolved, and/or liquid phase contamination at that location. The presence of detectable levels of target analytes in the vadose zone is dependent upon several factors, including the presence of vapor-phase hydrocarbons or dissolved or liquid concentrations adequate to facilitate volatilization into the unsaturated zone.

Terminology

In order to prevent misunderstanding of certain terms used in **TARGET's** reports, the following clarifications are offered:

Analyte refers to any of the hydrocarbons standardized for quantification in the chromatographic analysis.

Anomaly refers to an area where hydrocarbons were measured in excess of what would normally be considered "natural" or "background" levels.

Elevated and **significant** are used to describe concentrations of analytes which indicate the existence of a potential problem in the soil or ground water.

Feature is used in reference to a discernible pattern in the contoured data. It denotes a contour form rather than a definite or separate chemical occurrence.

Indicates is used when evidence dictates a unique conclusion. **Suggests** is used when several explanations of certain evidence are possible, but one in particular seems more likely. As a result, "indicates" carries a higher degree of confidence in a conclusion than does "suggests."

Occurrence is used to indicate an area where chemical compounds are present in sufficient concentrations to be detected by the analysis of soil vapors. The term is not indicative of any specific mode of occurrence (vapor, dissolved, etc.), and does not necessarily indicate or suggest the presence of "free product" or "phase-separated hydrocarbons."

Reporting Limit refers to the minimum concentration reported for each analyte.

Vadose zone represents the unsaturated zone between the ground water table and the ground surface.

APPENDIX C
DATA TABLES, CERTIFICATES OF ANALYSIS,
CHAIN-OF-CUSTODY

ANALYTICAL RESULTS

SOIL

Analytical Results at the PS
for SO
Tinker Air Force Base

Parameters	SB-039 A1046 2 - 2.5			SB-039 A1047 7 - 7.5			SB-039 A1048 11.5 - 12			SB-039 A1049 15 - 15.5			SB-040 A1050 2 - 2.5		
	Well/Boring: Sample ID: Depth:	Result	Units	Result	Units	Result	Units	Result	Units	Result	Units	Result	Units	Result	Units
Aluminum		13000	mg/kg	10000	mg/kg	7400	mg/kg	9500	mg/kg	15000	mg/kg	15000	mg/kg		
Arsenic - Graphite Furnace		2.0	mg/kg	3.2	mg/kg	1.8	mg/kg	3.3	mg/kg	2.3	mg/kg	2.3	mg/kg	N	mg/kg
Barium		400	mg/kg	760	mg/kg	390	mg/kg	690	mg/kg	230	mg/kg	230	mg/kg	N	mg/kg
Beryllium		2.4	mg/kg	1.3	mg/kg	1.2	mg/kg	1.6	mg/kg	1.8	mg/kg	1.8	mg/kg	N	mg/kg
Cadmium		1.00	mg/kg	1.3	mg/kg	0.46	mg/kg	0.26	mg/kg	0.98	mg/kg	0.98	mg/kg		mg/kg
Chromium		12	mg/kg	14	mg/kg	11	mg/kg	13	mg/kg	14	mg/kg	14	mg/kg		mg/kg
Chromium VI		0.11	mg/kg	0.26	mg/kg	<0.50	mg/kg	<0.50	mg/kg	<0.10	mg/kg	<0.10	mg/kg	U	mg/kg
Copper		8.3	mg/kg	6.8	mg/kg	6.0	mg/kg	7.9	mg/kg	7.8	mg/kg	7.8	mg/kg		mg/kg
Iron		16000	mg/kg	12000	mg/kg	8000	mg/kg	12000	mg/kg	12000	mg/kg	12000	mg/kg	N	mg/kg
Lead - Graphite Furnace		4.7	mg/kg	6.1	mg/kg	4.6	mg/kg	8.5	mg/kg	9.2	mg/kg	9.2	mg/kg	N	mg/kg
Mercury		0.027	mg/kg	<0.022	mg/kg	<0.020	mg/kg	<0.022	mg/kg	<0.024	mg/kg	<0.024	mg/kg	N	mg/kg
Nickel		13	mg/kg	16	mg/kg	9.3	mg/kg	11	mg/kg	11	mg/kg	11	mg/kg	U	mg/kg
Silver		0.50	mg/kg	0.11	mg/kg	0.023	mg/kg	0.26	mg/kg	0.079	mg/kg	0.079	mg/kg		mg/kg
Zinc		18	mg/kg	18	mg/kg	15	mg/kg	15	mg/kg	21	mg/kg	21	mg/kg		mg/kg
1,2,4-Trichlorobenzene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
1,2-Dichlorobenzene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
1,3-Dichlorobenzene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
1,4-Dichlorobenzene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
2,4,5-Trichlorophenol		<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	U	mg/kg
2,4,6-Trichlorophenol		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
2,4-Dichlorophenol		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
2,4-Dimethylphenol		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
2,4-Dinitrophenol		<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	U	mg/kg
2,6-Dinitrotoluene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
2,6-Dinitrotoluene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
2-Chloronaphthalene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
2-Chlorophenol		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
2-Methylnaphthalene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
2-Methylphenol		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg
2-Nitroaniline		<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	U	mg/kg
2-Nitrophenol		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	U	mg/kg

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Analytical Results at the PS
for SO
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:				SB-039 A1046 2 - 2.5				SB-039 A1047 7 - 7.5				SB-039 A1048 11.5 - 12				SB-039 A1049 15 - 15.5				SB-040 A1050 2 - 2.5			
	Result	QFR	Units		Result	QFR	Units		Result	QFR	Units		Result	QFR	Units		Result	QFR	Units		Result	QFR	Units	
3,3'-Dichlorobenzidine	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
3-Nitroaniline	<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg	
4,6-Dinitro-2-methylphenol	<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg	
4-Bromophenyl-phenylether	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
4-Chloro-3-methylphenol	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
4-Chloroaniline	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
4-Chlorophenyl-phenylether	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
4-Methylphenol	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
4-Nitroaniline	<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg	
4-Nitrophenol	<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg	
Acenaphthene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Acenaphthylene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Anthracene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Benzo(a)anthracene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Benzo(a)pyrene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Benzo(b)fluoranthene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Benzo(g,h,i)perylene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Benzo(k)fluoranthene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Benzoic Acid	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Benzyl alcohol	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Butylbenzylphthalate	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Chrysene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Di-n-butylphthalate	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Di-n-octylphthalate	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Dibenzo(a,h)anthracene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Dibenzofuran	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Diethylphthalate	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Dimethylphthalate	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Fluoranthene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Fluorene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Hexachlorobenzene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	

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Analytical Results at the PS
for SO
Tinker Air Force Base

Well/Boring: Sample ID: Depth:	SB-039 A1046 2 - 2.5				SB-039 A1047 7 - 7.5				SB-039 A1048 11.5 - 12				SB-039 A1049 15 - 15.5				SB-040 A1050 2 - 2.5			
	Result	QFR	Units	Parameters	Result	QFR	Units		Result	QFR	Units		Result	QFR	Units		Result	QFR	Units	
	<0.330	U	mg/kg	Hexachlorobutadiene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	Hexachlorocyclopentadiene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	Hexachloroethane	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	Indeno(1,2,3-cd)pyrene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	Isophorone	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	N-Nitroso-di-n-propylamine	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	N-Nitrosodiphenylamine	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	Naphthalene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	Nitrobenzene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.825	U	mg/kg	Pentachlorophenol	<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg	
	<0.330	U	mg/kg	Phenanthrene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	Phenol	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	Pyrene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	bis(2-Chloroethoxy)methane	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	bis(2-Chloroethyl)ether	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	bis(2-Chloroisopropyl)ethe	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<0.330	U	mg/kg	bis(2-Ethylhexyl)phthalate	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
	<5	U	ug/kg	1,1,1-Trichloroethane	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
	<5	U	ug/kg	1,1,2,2-Tetrachloroethane	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
	<5	U	ug/kg	1,1,2-Trichloroethane	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
	<5	U	ug/kg	1,1-Dichloroethane	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
	<5	U	ug/kg	1,1-Dichloroethene	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
	<5	U	ug/kg	1,2-Dichloroethane	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
	<5	U	ug/kg	1,2-Dichloropropane	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
	5.6	J	ug/kg	2-Butanone	8.5	J	ug/kg		4.0	J	ug/kg		<100	U	ug/kg		<100	U	ug/kg	
	<10	U	ug/kg	2-Chloroethylvinyl ether	<10	U	ug/kg		<10	U	ug/kg		<10	U	ug/kg		<10	U	ug/kg	
	<50	U	ug/kg	2-Hexanone	<50	U	ug/kg		<50	U	ug/kg		<50	U	ug/kg		<50	U	ug/kg	
	<50	U	ug/kg	4-Methyl-2-Pentanone	<50	U	ug/kg		<50	U	ug/kg		<50	U	ug/kg		<50	U	ug/kg	
	120	B	ug/kg	Acetone	130	B	ug/kg		13	JB	ug/kg		9.4	JB	ug/kg		9.2	JB	ug/kg	
	<5	U	ug/kg	Benzene	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
	<5	U	ug/kg	Bromoform	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	

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Analytical Results at the PS
for SO
Tinker Air Force Base

Parameters	SB-039 A1046 2 - 2.5			SB-039 A1047 7 - 7.5			SB-039 A1048 11.5 - 12			SB-039 A1049 15 - 15.5			SB-040 A1050 2 - 2.5		
	Well/Boring: Sample ID: Depth:	Result	Units	Result	Units	QFR	Result	Units	QFR	Result	Units	QFR	Result	Units	QFR
Bromomethane		<10	ug/kg	<10	ug/kg	U	<10	ug/kg	U	<10	ug/kg	U	<10	ug/kg	U
Carbon Disulfide		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
Carbon Tetrachloride		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
Chlorobenzene		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
Chlorodibromomethane		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
Chloroethane		<10	ug/kg	<10	ug/kg	U	<10	ug/kg	U	<10	ug/kg	U	<10	ug/kg	U
Chloroform		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
Chloromethane		<10	ug/kg	<10	ug/kg	U	<10	ug/kg	U	<10	ug/kg	U	<10	ug/kg	U
Dichlorobromomethane		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
Ethylbenzene		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
Methylene Chloride		1.0	ug/kg	3.0	ug/kg	J	1.4	ug/kg	J	<10	ug/kg	U	1.5	ug/kg	J
Styrene		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
Tetrachloroethene		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
Toluene		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
Trichloroethene		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
Vinyl Acetate		<10	ug/kg	<10	ug/kg	U	<10	ug/kg	U	<10	ug/kg	U	<10	ug/kg	U
Vinyl Chloride		<10	ug/kg	<10	ug/kg	U	<10	ug/kg	U	<10	ug/kg	U	<10	ug/kg	U
Xylenes (total)		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
cis-1,3-Dichloropropene		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
trans-1,2-Dichloroethene		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
trans-1,3-Dichloropropene		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U
trans-1,2-Dichloroethene		<5	ug/kg	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U	<5	ug/kg	U

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Analytical Results at the PS
for SO
Tinker Air Force Base

Parameters	SB-040 A1051 7 - 7.5				SB-040 A1052 10.5 - 11				SB-040 A1053 15 - 16				SB-040 A1054 15 - 16				SB-041 A1058 2 - 2.5			
	Result	QFR	Units		Result	QFR	Units		Result	QFR	Units		Result	QFR	Units		Result	QFR	Units	
Aluminum	8700	N	mg/kg		9000	N	mg/kg		9100	N	mg/kg		8300	N	mg/kg		13000	N	mg/kg	
Arsenic - Graphite Furnace	11	N	mg/kg		1.6	N	mg/kg		5.0	N	mg/kg		<0.87	UN	mg/kg		3.1	N	mg/kg	
Barium	580	N	mg/kg		150	N	mg/kg		760	N	mg/kg		530	N	mg/kg		210	N	mg/kg	
Beryllium	1.9		mg/kg		1.5		mg/kg		1.6		mg/kg		1.6		mg/kg		0.92		mg/kg	
Cadmium	0.94		mg/kg		0.79		mg/kg		0.45		mg/kg		0.10		mg/kg		0.57		mg/kg	
Chromium	10		mg/kg		11		mg/kg		13		mg/kg		12		mg/kg		12		mg/kg	
Chromium VI	<0.50	U	mg/kg		<0.50	U	mg/kg		<0.50	U	mg/kg		<0.50	U	mg/kg		<0.10	U	mg/kg	
Copper	11		mg/kg		8.0		mg/kg		8.0		mg/kg		8.4		mg/kg		8.2	N	mg/kg	
Iron	12000	N	mg/kg		9400	N	mg/kg		11000	N	mg/kg		10000	N	mg/kg		12000	N	mg/kg	
Lead - Graphite Furnace	27	N	mg/kg		4.6	N	mg/kg		8.9	N	mg/kg		8.8	N	mg/kg		11	N	mg/kg	
Mercury	<0.022	U	mg/kg		<0.023	U	mg/kg		<0.023	U	mg/kg		<0.020	U	mg/kg		<0.024	U	mg/kg	
Nickel	28		mg/kg		12		mg/kg		12		mg/kg		13		mg/kg		10		mg/kg	
Silver	0.69		mg/kg		0.28		mg/kg		0.32		mg/kg		0.14		mg/kg		0.57		mg/kg	
Zinc	18		mg/kg		19		mg/kg		16		mg/kg		15		mg/kg		21		mg/kg	
1,2,4-Trichlorobenzene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
1,2-Dichlorobenzene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
1,3-Dichlorobenzene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
1,4-Dichlorobenzene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
2,4,5-Trichlorophenol	<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg	
2,4,6-Trichlorophenol	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
2,4-Dichlorophenol	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
2,4-Dimethylphenol	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
2,4-Dinitrophenol	<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg	
2,4-Dinitrotoluene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
2,6-Dinitrotoluene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
2-Chloronaphthalene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
2-Chlorophenol	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
2-Methylnaphthalene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
2-Methylphenol	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
2-Nitroaniline	<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg	
2-Nitrophenol	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Analytical Results at the PS
for SO
Tinker Air Force Base

Parameters	SB-040 A1051 7 - 7.5			SB-040 A1052 10.5 - 11			SB-040 A1053 15 - 16			SB-040 A1054 15 - 16			SB-041 A1058 2 - 2.5		
	Well/Boring: Sample ID: Depth:	Result	Units	Result	Units	Result	Units	Result	Units	Result	Units	Result	Units	Result	Units
3,3'-Dichlorobenzidine		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
3-Nitroaniline		<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg
4,6-Dinitro-2-methylphenol		<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg
4-Bromophenyl-phenylether		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
4-Chloro-3-methylphenol		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
4-Chloroaniline		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
4-Chlorophenyl-phenylether		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
4-Methylphenol		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
4-Nitroaniline		<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg
4-Nitrophenol		<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg
Acenaphthene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Acenaphthylene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Anthracene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzo(a)anthracene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzo(a)pyrene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzo(b)fluoranthene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzo(g,h,i)perylene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzo(k)fluoranthene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzoic Acid		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzy alcohol		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Butylbenzylphthalate		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Chrysene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Di-n-butylphthalate		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Di-n-octylphthalate		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Dibenzo(a,h)anthracene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Dibenzofuran		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Diethylphthalate		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Dimethylphthalate		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Fluoranthene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Fluorene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Hexachlorobenzene		<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for
that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC Limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Analytical Results at the PS
for SO
Tinker Air Force Base

Well/Boring: Sample ID: Depth:	SB-040 A1051 7 - 7.5				SB-040 A1052 10.5 - 11				SB-040 A1053 15 - 16				SB-040 A1054 15 - 16				SB-041 A1058 2 - 2.5			
	Result	QFR	Units		Result	QFR	Units		Result	QFR	Units		Result	QFR	Units		Result	QFR	Units	
Hexachlorobutadiene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Hexachlorocyclopentadiene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Hexachloroethane	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Indeno(1,2,3-cd)pyrene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Isophorone	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
N-Nitroso-di-n-propylamine	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
N-Nitrosodiphenylamine	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Naphthalene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Nitrobenzene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Pentachlorophenol	<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg		<0.825	U	mg/kg	
Phenanthrene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Phenol	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
Pyrene	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
bis(2-Chloroethoxy)methane	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
bis(2-Chloroethyl)ether	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
bis(2-Chloroisopropyl)ethe	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
bis(2-Ethylhexyl)phthalate	<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg		<0.330	U	mg/kg	
1,1,1-Trichloroethane	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
1,1,2,2-Tetrachloroethane	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
1,1,2-Trichloroethane	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
1,1-Dichloroethane	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
1,1-Dichloroethene	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
1,2-Dichloroethane	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
1,2-Dichloropropane	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
2-Butanone	<100	U	ug/kg		<100	U	ug/kg		<100	U	ug/kg		<100	U	ug/kg		<100	U	ug/kg	
2-Chloroethylvinyl ether	<10	U	ug/kg		<10	U	ug/kg		<10	U	ug/kg		<10	U	ug/kg		<10	U	ug/kg	
2-Hexanone	<50	U	ug/kg		<50	U	ug/kg		<50	U	ug/kg		<50	U	ug/kg		<50	U	ug/kg	
4-Methyl-2-Pentanone	<50	U	ug/kg		<50	U	ug/kg		<50	U	ug/kg		<50	U	ug/kg		<50	U	ug/kg	
Acetone	7.7	JB	ug/kg		<100	U	ug/kg		<5.2	BJ	ug/kg		<8.8	JB	ug/kg		<10	JB	ug/kg	
Benzene	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	
Bromoform	<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg		<5	U	ug/kg	

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Analytical Results at the PS
for SO
Tinker Air Force Base

Parameters	SB-040 A1051 7 - 7.5			SB-040 A1052 10.5 - 11			SB-040 A1053 15 - 16			SB-040 A1054 15 - 16			SB-041 A1058 2 - 2.5		
	Well/Boring: Sample ID: Depth:	Result	Units	Result	Units	Result	Units	Result	Units	Result	Units	Result	Units	Result	Units
Bromomethane		<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	U	ug/kg
Carbon Disulfide		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
Carbon Tetrachloride		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
Chlorobenzene		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
Chlorodibromomethane		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
Chloroethane		<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	U	ug/kg
Chloroform		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
Chloromethane		<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	U	ug/kg
Dichlorobromomethane		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
Ethylbenzene		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
Methylene Chloride		<10	ug/kg	<10	ug/kg	<10	ug/kg	1.3	ug/kg	<10	ug/kg	<10	ug/kg	U	ug/kg
Styrene		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
Tetrachloroethene		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
Toluene		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
Trichloroethene		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
Vinyl Acetate		<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	U	ug/kg
Vinyl Chloride		<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg	U	ug/kg
Xylenes (total)		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
cis-1,3-Dichloropropene		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
cis-1,2-Dichloroethene		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
trans-1,3-Dichloropropene		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg
trans-1,2-Dichloroethene		<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg	U	ug/kg

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Analytical Results at the PS
for SO
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:		SB-041 A1059 7 - 7.5		SB-041 A1060 12.5 - 13.5		SB-041 A1061 16 - 16.5	
	Result	Units	QFR	Result	Units	QFR	Result	Units
Aluminum	8400	mg/kg	N	5800	mg/kg	N	9700	mg/kg
Arsenic - Graphite Furnace	2.4	mg/kg		1.2	mg/kg		3.9	mg/kg
Barium	210	mg/kg	N	330	mg/kg	N	930	mg/kg
Beryllium	0.86	mg/kg		0.50	mg/kg		0.83	mg/kg
Cadmium	1.5	mg/kg		0.58	mg/kg		0.70	mg/kg
Chromium	12	mg/kg		8.8	mg/kg		16	mg/kg
Chromium VI	<0.50	mg/kg	U	<0.50	mg/kg	U	<0.50	mg/kg
Copper	7.8	mg/kg	N	5.8	mg/kg	N	9.3	mg/kg
Iron	16000	mg/kg	N	6500	mg/kg	N	16000	mg/kg
Lead - Graphite Furnace	4.9	mg/kg	N	5.1	mg/kg	N	10	mg/kg
Mercury	<0.027	mg/kg	U	<0.021	mg/kg	U	<0.020	mg/kg
Nickel	15	mg/kg		9.8	mg/kg		13	mg/kg
Silver	0.41	mg/kg		0.33	mg/kg		0.67	mg/kg
Zinc	17	mg/kg		15	mg/kg		18	mg/kg
1,2,4-Trichlorobenzene	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
1,2-Dichlorobenzene	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
1,3-Dichlorobenzene	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
1,4-Dichlorobenzene	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
2,4,5-Trichlorophenol	<0.825	mg/kg	U	<0.825	mg/kg	U	<0.825	mg/kg
2,4,6-Trichlorophenol	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
2,4-Dichlorophenol	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
2,4-Dimethylphenol	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
2,4-Dinitrophenol	<0.825	mg/kg	U	<0.825	mg/kg	U	<0.825	mg/kg
2,4-Dinitrotoluene	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
2,6-Dinitrotoluene	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
2-Chloronaphthalene	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
2-Chlorophenol	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
2-Methylnaphthalene	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
2-Methylphenol	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg
2-Nitroaniline	<0.825	mg/kg	U	<0.825	mg/kg	U	<0.825	mg/kg
2-Nitrophenol	<0.330	mg/kg	U	<0.330	mg/kg	U	<0.330	mg/kg

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Analytical Results at the PS
for SO
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:		SB-041 A1059 7 - 7.5		SB-041 A1060 12.5 - 13.5		SB-041 A1061 16 - 16.5	
	Result	Units	Result	Units	Result	Units	Result	Units
3,3'-Dichlorobenzidine	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
3-Nitroaniline	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg
4,6-Dinitro-2-methylphenol	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg
4-Bromophenyl-phenylether	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
4-Chloro-3-methylphenol	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
4-Chloroaniline	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
4-Chlorophenyl-phenylether	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
4-Methylphenol	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
4-Nitroaniline	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg
4-Nitrophenol	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Acenaphthene	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg	<0.825	mg/kg
Acenaphthylene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Anthracene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzo(a)anthracene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzo(a)pyrene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzo(b)fluoranthene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzo(g,h,i)perylene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzo(k)fluoranthene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzoic Acid	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Benzyl alcohol	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Butylbenzylphthalate	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Chrysene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Di-n-butylphthalate	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Di-n-octylphthalate	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Dibenzo(a,h)anthracene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Dibenzofuran	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Diethylphthalate	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Dimethylphthalate	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Fluoranthene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Fluorene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Hexachlorobenzene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg

B = Analyte was also found in sample blank

E = Concentration exceeds instrument calibration range for that specific analysis

J = Concentration is an estimated value

N = Sample is outside of Matrix Spike QC limit

< = Not detected

QFR = Qualifier

Analytical data has not been validated.

Analytical Results at the PS
for SO
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:		SB-041 A1059 7 - 7.5		SB-041 A1060 12.5 - 13.5		SB-041 A1061 16 - 16.5	
	Result	Units	Result	Units	Result	Units	Result	Units
Hexachlorobutadiene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Hexachlorocyclopentadiene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Hexachloroethane	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Indeno(1,2,3-cd)pyrene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Isophorone	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
N-Nitroso-di-n-propylamine	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
N-Nitrosodiphenylamine	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Naphthalene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Nitrobenzene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Pentachlorophenol	<0.825	mg/kg	<0.330	mg/kg	<0.825	mg/kg	<0.330	mg/kg
Phenanthrene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Phenol	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
Pyrene	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
bis(2-Chloroethoxy)methane	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
bis(2-Chloroethyl)ether	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
bis(2-Chloroisopropyl)ethe	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
bis(2-Ethylhexyl)phthalate	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg	<0.330	mg/kg
1,1,1-Trichloroethane	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg
1,1,2,2-Tetrachloroethane	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg
1,1,2-Trichloroethane	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg
1,1-Dichloroethane	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg
1,1-Dichloroethene	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg
1,2-Dichloroethane	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg
1,2-Dichloropropane	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg
2-Butanone	<100	ug/kg	<100	ug/kg	4.2	ug/kg	<100	ug/kg
2-Chloroethylvinyl ether	<10	ug/kg	<10	ug/kg	<10	ug/kg	<10	ug/kg
2-Hexanone	<50	ug/kg	<50	ug/kg	<50	ug/kg	<50	ug/kg
4-Methyl-2-Pentanone	<50	ug/kg	<50	ug/kg	<50	ug/kg	<50	ug/kg
Acetone	<100	ug/kg	<100	ug/kg	9.6	ug/kg	11	ug/kg
Benzene	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg
Bromoform	<5	ug/kg	<5	ug/kg	<5	ug/kg	<5	ug/kg

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for
that specific analysis
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N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Analytical Results at the PS
for SO
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:		SB-041 A1059 7 - 7.5		SB-041 A1060 12.5 - 13.5		SB-041 A1061 16 - 16.5	
	Result	Units	Result	Units	Result	Units	Result	Units
Bromomethane	<10	ug/kg			<10	ug/kg	<10	ug/kg
Carbon Disulfide	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
Carbon Tetrachloride	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
Chlorobenzene	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
Chlorodibromomethane	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
Chloroethane	<10	ug/kg	U		<10	ug/kg	<10	ug/kg
Chloroform	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
Chloromethane	<10	ug/kg	U		<10	ug/kg	<10	ug/kg
Dichlorobromomethane	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
Ethylbenzene	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
Methylene Chloride	<10	ug/kg	U		<10	ug/kg	1.1	ug/kg
Styrene	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
Tetrachloroethene	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
Toluene	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
Trichloroethene	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
Vinyl Acetate	<10	ug/kg	U		<10	ug/kg	<10	ug/kg
Vinyl Chloride	<10	ug/kg	U		<10	ug/kg	<10	ug/kg
Xylenes (total)	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
cis-1,3-Dichloropropene	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
cis-1,2-Dichloroethene	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
trans-1,3-Dichloropropene	<5	ug/kg	U		<5	ug/kg	<5	ug/kg
trans-1,2-Dichloroethene	<5	ug/kg	U		<5	ug/kg	<5	ug/kg

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Analytical data has not been validated.

ANALYTICAL RESULTS
QUALITY CONTROL - SOIL

Analytical QC results at the PS
for SQ
Tinker Air Force Base

Parameters	SB-039 A1047-MSD 7 - 7.5			SB-041 A1060-MS 12.5 - 13.5		
	Result	QFR	Units	Result	QFR	Units
Aluminum	1134		%rec	672		%rec
Arsenic - Graphite Furnace	23.8		%rec	86		%rec
Barium	0		%rec	391		%rec
Beryllium	83		%rec	85		%rec
Cadmium	86		%rec	88		%rec
Chromium	92		%rec	90		%rec
Chromium VI	93		%rec	100		%rec
Copper	92		%rec	92		%rec
Iron	896		%rec	335		%rec
Lead - Graphite Furnace	3.4		%rec	105		%rec
Mercury	109		%rec	106		%rec
Nickel	86		%rec	90		%rec
Silver	86		%rec	87		%rec
Zinc	86		%rec	84		%rec
1,2,4-Trichlorobenzene	89		%rec	95		%rec
1,4-Dichlorobenzene	75		%rec	93		%rec
2,4,6-TRIBROMOPHENOL	82		%rec	84		%rec
2,4,6-Tribromophenol				72		%rec
2,4-Dinitrophenol				71		%rec
2,4-Dinitrotoluene	84		%rec	87		%rec
2-Chlorophenol	90		%rec			
2-FLUOROBIPHENYL	92		%rec			
2-FLUOROPHENOL	70		%rec			
2-Fluorobiphenyl						
2-Fluorophenol				72		%rec
3-Nitroaniline				70		%rec
4-Chloro-3-methylphenol	89		%rec	69		%rec
4-Nitrophenol	67		%rec	67		%rec
Acenaphthene	121		%rec	79		%rec
Acenaphthylene				67		%rec
N-Nitroso-di-n-propylamine	99		%rec	87		%rec
				80		%rec

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N = Sample is outside of Matrix Spike QC Limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Analytical QC results at the PS
for SQ
Tinker Air Force Base

Well/Boring: Sample ID: Depth:	SB-039 A1047-MS 7 - 7.5			SB-041 A1060-MS 12.5 - 13.5			SB-041 A1060-MSD 12.5 - 13.5		
	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
Parameters									
NITROBENZENE-D5	79		%rec	74		%rec	79		%rec
Nitrobenzene-D5									
PHENOL-D5	72		%rec	67		%rec			%rec
Pentachlorophenol	74		%rec	62		%rec	90		%rec
Phenol	79		%rec	73		%rec	81		%rec
Phenol-D5							69		%rec
Pyrene	96		%rec	89		%rec	97		%rec
TERPHENYL-D14	77		%rec	73		%rec			%rec
Terphenyl-D14							80		%rec
1,1-Dichloroethene	90		%rec	99		%rec	79		%rec
1,2-Dichloroethane-D4	111		%rec	110		%rec	109		%rec
Benzene	96		%rec	102		%rec	94		%rec
Bromofluorobenzene	97		%rec	98		%rec	104		%rec
Chlorobenzene	103		%rec	108		%rec	102		%rec
Toluene	103		%rec	110		%rec	100		%rec
Toluene-D8	103		%rec	103		%rec	108		%rec
Trichloroethene	85		%rec	89		%rec	87		%rec

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E = Concentration exceeds instrument calibration range for that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

ANALYTICAL RESULTS
QUALITY CONTROL - WATER

Analytical results at the PS
for WQ
Tinker Air Force Base

Well/Boring: Sample ID: Depth:		FIELDQC A1055 0 - 0		FIELDQC A1056 0 - 0		FIELDQC A1057 0 - 0			
Parameters	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
Aluminum									mg/l
Arsenic - Graphite Furnace									mg/l
Barium									mg/l
Beryllium									mg/l
Cadmium									mg/l
Chromium									mg/l
Chromium VI									mg/l
Copper									mg/l
Iron									mg/l
Lead - Graphite Furnace									mg/l
Mercury									mg/l
Nickel									mg/l
Silver									mg/l
Zinc									mg/l
1,2,4-Trichlorobenzene									ug/l
1,2-Dichlorobenzene									ug/l
1,3-Dichlorobenzene									ug/l
1,4-Dichlorobenzene									ug/l
2,4,5-Trichlorophenol									ug/l
2,4,6-Tribromophenol									%rec
2,4,6-Trichlorophenol									ug/l
2,4-Dichlorophenol									ug/l
2,4-Dimethylphenol									ug/l
2,4-Dinitrophenol									ug/l
2,4-Dinitrotoluene									ug/l
2,6-Dinitrotoluene									ug/l
2-Chloronaphthalene									ug/l
2-Chlorophenol									ug/l
2-Fluorobiphenyl									%rec
2-Fluorophenol									%rec
2-Methylnaphthalene									ug/l

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC Limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Analytical QC results at the PS
for WQ
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:			FIELDQC A1055 0 - 0			FIELDQC A1056 0 - 0			FIELDQC A1057 0 - 0		
	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
2-Methylphenol												ug/l
2-Nitroaniline												ug/l
2-Nitrophenol												ug/l
3,3'-Dichlorobenzidine												ug/l
3-Nitroaniline												ug/l
4,6-Dinitro-2-methylphenol												ug/l
4-Bromophenyl-phenylether												ug/l
4-Chloro-3-methylphenol												ug/l
4-Chloroaniline												ug/l
4-Chlorophenyl-phenylether												ug/l
4-Methylphenol												ug/l
4-Nitroaniline												ug/l
4-Nitrophenol												ug/l
Acenaphthene												ug/l
Acenaphthylene												ug/l
Anthracene												ug/l
Benzo(a)anthracene												ug/l
Benzo(a)pyrene												ug/l
Benzo(b)fluoranthene												ug/l
Benzo(g,h,i)perylene												ug/l
Benzo(k)fluoranthene												ug/l
Benzoic Acid												ug/l
Benzyl alcohol												ug/l
Butylbenzylphthalate												ug/l
Chrysene												ug/l
Di-n-butylphthalate												ug/l
Di-n-octylphthalate												ug/l
Dibenzo(a,h)anthracene												ug/l
Dibenzofuran												ug/l
Diethylphthalate												ug/l
Dimethylphthalate												ug/l

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QFR = Qualifier
Analytical data has not been validated.

Analytical QC results at the PS
for WQ
Tinker Air Force Base

Parameters	Well/Boring: Sample ID: Depth:	FIELDQC A1055 0 - 0			FIELDQC A1056 0 - 0			FIELDQC A1057 0 - 0		
		Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
Fluoranthene								<10	U	ug/l
Fluorene								<10	U	ug/l
Hexachlorobenzene								<10	U	ug/l
Hexachlorobutadiene								<10	U	ug/l
Hexachlorocyclopentadiene								<10	U	ug/l
Hexachloroethane								<10	U	ug/l
Indeno(1,2,3-cd)pyrene								<10	U	ug/l
Isophorone								<10	U	ug/l
N-Nitroso-di-n-propylamine								<10	U	ug/l
N-Nitrosodiphenylamine								<10	U	ug/l
Naphthalene								<10	U	ug/l
Nitrobenzene								<10	U	ug/l
Nitrobenzene-D5								<10	U	ug/l
Pentachlorophenol								65	U	%rec
Phenanthrene								<25	U	ug/l
Phenol								<10	U	ug/l
Phenol-D5								60	U	ug/l
Pyrene								<10	U	%rec
Terphenyl-D14								94	U	%rec
bis(2-Chloroethoxy)methane								<10	U	ug/l
bis(2-Chloroethyl) ether								<10	U	ug/l
bis(2-Chloroisopropyl) ether								<10	U	ug/l
bis(2-Ethylhexyl)phthalate								<10	U	ug/l
1,1,1-Trichloroethane		<5	U	ug/l				<5	U	ug/l
1,1,2,2-Tetrachloroethane		<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
1,1,2-Trichloroethane		<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
1,1-Dichloroethane		<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
1,1-Dichloroethene		<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
1,2-Dichloroethane		<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
1,2-Dichloroethane-D4		108		%rec	95		%rec	100	U	%rec
1,2-Dichloropropane		<5	U	ug/l	<5	U	ug/l	<5	U	ug/l

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Analytical QC results at the PS
for WQ
Tinker Air Force Base

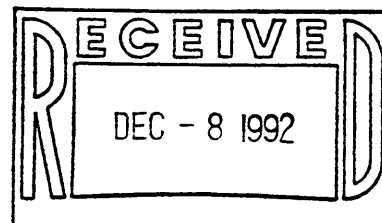
Parameters	Well/Boring: Sample ID: Depth:			FIELDQC A1055 0 - 0			FIELDQC A1056 0 - 0			FIELDQC A1057 0 - 0		
	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
2-Butanone	<100	U	ug/l	<2.0	U	ug/l	<100	U	ug/l	<100	U	ug/l
2-Chloroethylvinyl ether	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
2-Hexanone	<50	U	ug/l	<50	U	ug/l	<50	U	ug/l	<50	U	ug/l
4-Methyl-2-Pentanone	<50	U	ug/l	<50	U	ug/l	<50	U	ug/l	<50	U	ug/l
Acetone	<100	U	ug/l	<100	U	ug/l	<100	U	ug/l	<100	U	ug/l
Benzene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Bromofluorobenzene	104	U	%rec	105	U	%rec	102	U	%rec	102	U	%rec
Bromoform	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Bromomethane	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
Carbon Disulfide	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Carbon Tetrachloride	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Chlorobenzene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Chlorodibromomethane	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Chloroethane	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
Chloroform	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Chloromethane	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
Dichlorobromomethane	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Ethylbenzene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Methylene Chloride	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
Styrene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Tetrachloroethene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Toluene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Toluene-D8	95	U	%rec	94	U	%rec	95	U	%rec	95	U	%rec
Trichloroethene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
Vinyl Acetate	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
Vinyl Chloride	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l	<10	U	ug/l
Xylenes (total)	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
cis-1,3-Dichloropropene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
cis-1,2-Dichloroethene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
trans-1,3-Dichloropropene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l
trans-1,2-Dichloroethene	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l	<5	U	ug/l

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

CERTIFICATES OF ANALYSIS



ANALYTICAL SERVICES



CERTIFICATE OF ANALYSIS

IT CORPORATION
1250 CAPITAL OF TX HWY
BLDG. 3, SUITE 200
AUSTIN, TX 78746-6443
TIM JENNINGS

Date: 12/07/93

Work Order: B3-10-336

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O.5001
Date Received: 10/26/93
Number of Samples: 21
Sample Type: SOIL

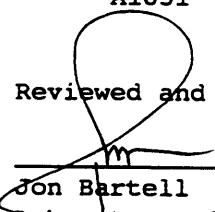
409832-003-01

I. Introduction

Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
A1041	B3-10-336-01
A1042	B3-10-336-02
A1043	B3-10-336-03
A1044	B3-10-336-04
A1045	B3-10-336-05
A1046	B3-10-336-06
A1047	B3-10-336-07
A1047-MS	B3-10-336-08
A1047-MSD	B3-10-336-09
A1048	B3-10-336-10
A1049	B3-10-336-11
A1050	B3-10-336-12
A1051	B3-10-336-13

Reviewed and Approved:


Jon Bartell
Laboratory Director

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

Samples, continued from above:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
A1052	B3-10-336-14
A1053	B3-10-336-15
A1054	B3-10-336-16
A1055	B3-10-336-17
J5420	B3-10-336-18
LAB BLANK #1	B3-10-336-19
LAB BLANK #1	B3-10-336-20
LAB BLANK 2	B3-10-336-21

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1041
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 11/01/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

			Reporting						Reporting		
			Result	Qual	Limit				Result	Qual	Limit
Chloromethane	10	U	10			1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10			trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10			Trichloroethene	5	U	5		
Chloroethane	10	U	10			Chlorodibromomethane	5	U	5		
Methylene chloride	10	U	10			1,1,2-Trichloroethane	5	U	5		
Acetone	100	U	100			Benzene	5	U	5		
Carbon disulfide	5	U	5			cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5			2-Chloroethylvinyl ether	10	U	10		
1,1-Dichloroethane	5	U	5			Bromoform	5	U	5		
trans-1,2-Dichloroethene	5	U	5			2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5			4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5			Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5			1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	100	U	100			Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5			Chlorobenzene	5	U	5		
Carbon tetrachloride	5	U	5			Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10			Styrene	5	U	5		
Dichlorobromomethane	5	U	5			Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	94	88 - 110
BROMOFLUOROBENZENE	100	86 - 115
1,2-DICHLOROETHANE-D4	103	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1042
SAMPLE DATE: 10/25/93 11:10:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.23	0.10 MG/KG	11/04/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1042
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

	Reporting				Reporting		
	Result	Qual	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	2.5	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	8.9	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
trans-1,2-Dichloroethene	5	U	5	Bromoform	5	U	5
cis-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
Chloroform	5	U	5	4-Methyl-2-pentanone	50	U	50
1,2-Dichloroethane	5	U	5	Tetrachloroethene	5	U	5
2-Butanone	100	U	100	1,1,2,2-Tetrachloroethane	5	U	5
1,1,1-Trichloroethane	5	U	5	Toluene	5	U	5
Carbon tetrachloride	5	U	5	Chlorobenzene	5	U	5
Vinyl acetate	10	U	10	Ethylbenzene	5	U	5
Dichlorobromomethane	5	U	5	Styrene	5	U	5
				Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	94	74 - 121
1,2-DICHLOROETHANE-D4	109	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1042
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting		Reporting
	Result	Qual	Limit	Result Qual Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene 0.330 U 0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline 0.825 U 0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene 0.330 U 0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol 0.825 U 0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol 0.825 U 0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran 0.330 U 0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene 0.330 U 0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate 0.330 U 0.330
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether 0.330 U 0.330
ethylphenol	0.330	U	0.330	Fluorene 0.330 U 0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline 0.825 U 0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol 0.825 U 0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1) 0.330 U 0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether 0.330 U 0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene 0.330 U 0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol 0.825 U 0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene 0.330 U 0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene 0.330 U 0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate 0.330 U 0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene 0.330 U 0.330
Naphthalene	0.330	U	0.330	Pyrene 0.330 U 0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate 0.330 U 0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine 0.330 U 0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene 0.330 U 0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene 0.330 U 0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate 0.330 U 0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate 0.330 U 0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene 0.330 U 0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene 0.330 U 0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene 0.330 U 0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene 0.330 U 0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene 0.330 U 0.330
				Benzo(g,h,i)perylene 0.330 U 0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: AEW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1042
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	74	23 - 120
2-Fluorobiphenyl	91	30 - 115
Terphenyl-D14	79	18 - 137
Phenol-D5	77	24 - 113
2-Fluorophenol	68	25 - 121
2,4,6-Tribromophenol	76	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1042**
 SAMPLE DATE: **10/25/93**
 SAMPLE MATRIX: **SOIL**
 DILUTION FACTOR (6010): **107.526**
 UNITS: **MG/KG**

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.0	N	0.88	7060	11/12/93
Aluminum	11000	N	22	6010	11/13/93
Barium	110	N*	22	6010	11/13/93
Beryllium	1.3		0.54	6010	11/13/93
Cadmium	0.51		0.54	6010	11/13/93
Chromium	11		1.1	6010	11/13/93
Copper	5.9		2.7	6010	11/13/93
Iron	8600	N*	11	6010	11/13/93
Nickel	9.0		4.3	6010	11/13/93
Lead	3.4	N	0.26	7421	11/12/93
Mercury	0.022	U	0.022	7471	11/07/93
Silver	0.15		1.1	6010	11/13/93
Zinc	17		2.2	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1043
SAMPLE DATE: 10/25/93 11:20:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.34	0.10	MG/KG	11/04/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1043
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

	Reporting				Reporting		
	Result	Qual	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	1.6	JB	10	1,1,2-Trichloroethane	5	U	5
Acetone	9.9	J	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,1-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	5.7	J	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	107	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

(512) 892-6684

409832-003-01

Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1043
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

	Result	Qual	Limit		Result	Qual	Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
ethylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1043
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	58	23 - 120
2-Fluorobiphenyl	70	30 - 115
Terphenyl-D14	60	18 - 137
Phenol-D5	55	24 - 113
2-Fluorophenol	46	25 - 121
2,4,6-Tribromophenol	57	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1043
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 83.3333
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.1	N	1.2	7060	11/12/93
Aluminum	7000	N	17	6010	11/13/93
Barium	56	N*	17	6010	11/13/93
Beryllium	1.2		0.42	6010	11/13/93
Cadmium	0.80		0.42	6010	11/13/93
Chromium	9.7		0.83	6010	11/13/93
Copper	4.6		2.1	6010	11/13/93
Iron	8200	N*	8.3	6010	11/13/93
Nickel	11		3.3	6010	11/13/93
Lead	4.4	N	0.35	7421	11/12/93
Mercury	0.022	U	0.022	7471	11/07/93
Silver	0.24		0.83	6010	11/13/93
Zinc	14		1.7	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1044
SAMPLE DATE: 10/25/93 11:25:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10 MG/KG	11/04/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1044
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	4.6	J	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	1.8	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	7.7	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
trans-1,2-Dichloroethene	5	U	5	Bromoform	5	U	5
cis-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
Chloroform	5	U	5	4-Methyl-2-pentanone	50	U	50
1,2-Dichloroethane	5	U	5	Tetrachloroethene	5	U	5
2-Butanone	100	U	100	1,1,2,2-Tetrachloroethane	5	U	5
1,1,1-Trichloroethane	5	U	5	Toluene	5	U	5
Carbon tetrachloride	5	U	5	Chlorobenzene	5	U	5
Vinyl acetate	10	U	10	Ethylbenzene	5	U	5
Dichlorobromomethane	5	U	5	Styrene	5	U	5
				Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	92	74 - 121
1,2-DICHLOROETHANE-D4	109	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1044
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

			Reporting					Reporting	
	Result	Qual	Limit		Result	Qual	Limit		
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330		
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825		
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330		
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825		
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825		
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330		
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330		
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330		
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330		
ethylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330		
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825		
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825		
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330		
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330		
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330		
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825		
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330		
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330		
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330		
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330		
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330		
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330		
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330		
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330		
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330		
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330		
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U	0.330		
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330		
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330		
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330		
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330		
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330		
				Benzo(g,h,i)perylene	0.330	U	0.330		

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1044
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	77	23 - 120
2-Fluorobiphenyl	91	30 - 115
Terphenyl-D14	80	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	60	25 - 121
2,4,6-Tribromophenol	82	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1044
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 94.3396
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	4.2	N	1.1	7060	11/12/93
Aluminum	9800	N	19	6010	11/13/93
Barium	270	N*	19	6010	11/13/93
Beryllium	1.9		0.47	6010	11/13/93
Cadmium	0.92		0.47	6010	11/13/93
Chromium	15		0.94	6010	11/13/93
Copper	8.6		2.4	6010	11/13/93
Iron	14000	N*	9.4	6010	11/13/93
Nickel	16		3.8	6010	11/13/93
Lead	4.5	N	0.33	7421	11/12/93
Mercury	0.023	U	0.023	7471	11/07/93
Silver	0.20		0.94	6010	11/13/93
Zinc	20		1.9	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1045
SAMPLE DATE: 10/25/93 11:35:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.13	0.10	MG/KG	11/04/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: 83-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1045
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	8.5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	13	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	2.6	J	5	2-Chloroethylvinyl ether	10	U	10
1,1-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	4.1	J	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	7.5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	111	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: AEW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1045
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

Reporting			Reporti		
	Result	Qual Limit	Result	Qual Limit	
Phenol	0.330	U 0.330	2,6-Dinitrotoluene	0.330	U 0.330
bis(2-Chloroethyl)ether	0.330	U 0.330	3-Nitroaniline	0.825	U 0.825
2-Chlorophenol	0.330	U 0.330	Acenaphthene	0.330	U 0.330
1,3-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrophenol	0.825	U 0.825
1,4-Dichlorobenzene	0.330	U 0.330	4-Nitrophenol	0.825	U 0.825
Benzyl alcohol	0.330	U 0.330	Dibenzofuran	0.330	U 0.330
1,2-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrotoluene	0.330	U 0.330
2-Methylphenol	0.330	U 0.330	Diethylphthalate	0.330	U 0.330
3(2-Chloroisopropyl)ether	0.330	U 0.330	4-Chlorophenyl-phenylether	0.330	U 0.330
4-Methylphenol	0.330	U 0.330	Fluorene	0.330	U 0.330
N-Nitroso-di-n-propylamine	0.330	U 0.330	4-Nitroaniline	0.825	U 0.825
Hexachloroethane	0.330	U 0.330	4,6-Dinitro-2-methylphenol	0.825	U 0.825
Nitrobenzene	0.330	U 0.330	N-Nitrosodiphenylamine (1)	0.330	U 0.330
Isophorone	0.330	U 0.330	4-Bromophenyl-phenylether	0.330	U 0.330
2-Nitrophenol	0.330	U 0.330	Hexachlorobenzene	0.330	U 0.330
2,4-Dimethylphenol	0.330	U 0.330	Pentachlorophenol	0.825	U 0.825
Benzoic Acid	0.330	U 0.330	Phenanthrene	0.330	U 0.330
bis(2-Chloroethoxy)methane	0.330	U 0.330	Anthracene	0.330	U 0.330
2,4-Dichlorophenol	0.330	U 0.330	Di-n-butylphthalate	0.330	U 0.330
1,2,4-Trichlorobenzene	0.330	U 0.330	Fluoranthene	0.330	U 0.330
Naphthalene	0.330	U 0.330	Pyrene	0.330	U 0.330
4-Chloroaniline	0.330	U 0.330	Butylbenzylphthalate	0.330	U 0.330
Hexachlorobutadiene	0.330	U 0.330	3,3'-Dichlorobenzidine	0.330	U 0.330
4-Chloro-3-methylphenol	0.330	U 0.330	Benzo(a)anthracene	0.330	U 0.330
2-Methylnaphthalene	0.330	U 0.330	Chrysene	0.330	U 0.330
Hexachlorocyclopentadiene	0.330	U 0.330	bis(2-Ethylhexyl)phthalate	0.330	U 0.330
2,4,6-Trichlorophenol	0.330	U 0.330	Di-n-octylphthalate	0.330	U 0.330
2,4,5-Trichlorophenol	0.825	U 0.825	Benzo(b)fluoranthene	0.330	U 0.330
2-Chloronaphthalene	0.330	U 0.330	Benzo(k)fluoranthene	0.330	U 0.330
2-Nitroaniline	0.825	U 0.825	Benzo(a)pyrene	0.330	U 0.330
Dimethylphthalate	0.330	U 0.330	Indeno(1,2,3-cd)pyrene	0.330	U 0.330
Acenaphthylene	0.330	U 0.330	Dibenzo(a,h)anthracene	0.330	U 0.330
			Benzo(g,h,i)perylene	0.330	U 0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1045
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	74	23 - 120
2-Fluorobiphenyl	90	30 - 115
Terphenyl-D14	76	18 - 137
Phenol-D5	72	24 - 113
2-Fluorophenol	61	25 - 121
2,4,6-Tribromophenol	72	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1045**
 SAMPLE DATE: **10/25/93**
 SAMPLE MATRIX: **SOIL**
 DILUTION FACTOR (6010): **94.3396**
 UNITS: **MG/KG**

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.8	N	1.0	7060	11/12/93
Aluminum	8800	N	19	6010	11/13/93
Barium	410	N*	19	6010	11/13/93
Beryllium	1.6		0.47	6010	11/13/93
Cadmium	0.68		0.47	6010	11/13/93
Chromium	13		0.94	6010	11/13/93
Copper	7.9		2.4	6010	11/13/93
Iron	12000	N*	9.4	6010	11/13/93
Nickel	14		3.8	6010	11/13/93
Lead	6.6	N	0.31	7421	11/12/93
Mercury	0.022	U	0.022	7471	11/07/93
Silver	0.098		0.94	6010	11/13/93
Zinc	18		1.9	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-336

409832-003-01

SAMPLE ID: A1046
SAMPLE DATE: 10/25/93 14:15:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.11	0.10 MG/KG	11/04/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1046
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

			Reporting						Reporting		
	Result	Qual	Limit				Result	Qual	Limit		
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5				
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5				
Vinyl chloride	10	U	10	Trichloroethene	5	U	5				
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5				
Methylene chloride	1.0	J	10	1,1,2-Trichloroethane	5	U	5				
Acetone	120	B	100	Benzene	5	U	5				
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5				
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10				
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5				
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50				
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50				
Chloroform	5	U	5	Tetrachloroethene	5	U	5				
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5				
2-Butanone	5.6	J	100	Toluene	5	U	5				
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5				
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5				
Vinyl acetate	10	U	10	Styrene	5	U	5				
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5				

Surrogates	% Recovery	Limits
TOLUENE-D8	104	81 - 117
BROMOFLUOROBENZENE	95	74 - 121
1,2-DICHLOROETHANE-D4	109	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-336

409832-003-01

TEST NAME: ABM HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1046
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/14/93
 DILUTION FACTOR: 0.033

UNITS: MG/KG Reporting
 Result Qual Limit

Reporting
 Result Qual Limit

Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
ethylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1046
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	77	23 - 120
2-Fluorobiphenyl	89	30 - 115
Terphenyl-D14	83	18 - 137
Phenol-D5	65	24 - 113
2-Fluorophenol	55	25 - 121
2,4,6-Tribromophenol	92	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1046**
 SAMPLE DATE: **10/25/93**
 SAMPLE MATRIX: **SOIL**
 DILUTION FACTOR (6010): **105.263**
 UNITS: **MG/KG**

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.0	N	0.94	7060	11/12/93
Aluminum	13000	N	21	6010	11/13/93
Barium	400	N*	21	6010	11/13/93
Beryllium	2.4		0.53	6010	11/13/93
Cadmium	1.00		0.53	6010	11/13/93
Chromium	12		1.1	6010	11/13/93
Copper	8.3		2.6	6010	11/13/93
Iron	16000	N*	11	6010	11/13/93
Nickel	13		4.2	6010	11/13/93
Lead	4.7	N	0.28	7421	11/12/93
Mercury	0.027		0.022	7471	11/07/93
Silver	0.50		1.1	6010	11/13/93
Zinc	18		2.1	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1047
SAMPLE DATE: 10/25/93 14:20:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.26	0.10 MG/KG	11/04/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1047
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	3.0	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	130	B	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	8.5	J	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	104	81 - 117
BROMOFLUOROBENZENE	95	74 - 121
1,2-DICHLOROETHANE-D4	111	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1047
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/14/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

	Result	Qual	Limit		Result	Qual	Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
ethylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: ARW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1047
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	67	23 - 120
2-Fluorobiphenyl	88	30 - 115
Terphenyl-D14	78	18 - 137
Phenol-D5	72	24 - 113
2-Fluorophenol	58	25 - 121
2,4,6-Tribromophenol	74	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1047
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 101.010
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	3.2	N	0.86	7060	11/12/93
Aluminum	10000	N	20	6010	11/13/93
Barium	760	N*	20	6010	11/13/93
Beryllium	1.3		0.51	6010	11/13/93
Cadmium	1.3		0.51	6010	11/13/93
Chromium	14		1.0	6010	11/13/93
Copper	6.8		2.5	6010	11/13/93
Iron	12000	N*	10	6010	11/13/93
Nickel	16		4.0	6010	11/13/93
Lead	6.1	N	0.26	7421	11/12/93
Mercury	0.022	U	0.022	7471	11/07/93
Silver	0.11		1.0	6010	11/13/93
Zinc	18		2.0	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

(512) 892-6684

409832-003-01

Work Order: B3-10-336

SAMPLE ID: A1047-MS
SAMPLE DATE: 10/25/93 14:20:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		93		% REC	11/05/93	EPA7196

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
METHOD REFERENCE: EPA8240

SAMPLE ID: A1047-MS
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0
UNITS: % REC

	Result		Result
1,1-Dichloroethene	90	Trichloroethene	85
		Benzene	96
		Toluene	103
		Chlorobenzene	103

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	111	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-336

409832-003-01

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1047-MS
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL
EXTRACTION DATE: 11/01/93
ANALYSIS DATE: 11/13/93
DILUTION FACTOR: 0.033
UNITS: % REC

	Result		Result
Phenol	79	Acenaphthene	121
2-Chlorophenol	90	4-Nitrophenol	67
1,4-Dichlorobenzene	75	2,4-Dinitrotoluene	84
N-Nitroso-di-n-propylamine	99	Pentachlorophenol	74
1,2,4-Trichlorobenzene	89	Pyrene	96
4-Chloro-3-methylphenol	89		

Surrogates	% Recovery	Limits
Nitrobenzene-D5	79	23 - 120
2-Fluorobiphenyl	92	30 - 115
Terphenyl-D14	77	18 - 137
Phenol-D5	72	24 - 113
2-Fluorophenol	70	25 - 121
2,4,6-Tribromophenol	82	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1047-MS
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 101.010
 UNITS: % REC

	Result	Method Reference	Analysis Date
Arsenic	23.8	7060	11/12/93
Aluminum	1134	6010	11/13/93
Barium	0	6010	11/13/93
Beryllium	83	6010	11/13/93
Cadmium	86	6010	11/13/93
Chromium	92	6010	11/13/93
Copper	92	6010	11/13/93
Iron	896	6010	11/13/93
Nickel	86	6010	11/13/93
Lead	3.4	7421	11/12/93
Mercury	109	7471	11/07/93
Silver	86	6010	11/13/93
Zinc	86	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES, affecting all soil samples in batch. LCS / LCSD results and method Quality Control were acceptable.

Duplicate analysis outside control limits due to matrix interference on barium and iron analysis by ICPES, affecting all soil samples in batch. LCS/LCSD results & method QC were acceptable.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1047-MSD
SAMPLE DATE: 10/25/93 14:20:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		96		% REC	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1047-MSD
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: % REC

	Result		Result
1,1-Dichloroethene	99	Trichloroethene	89
		Benzene	102
		Toluene	110
		Chlorobenzene	108

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	98	74 - 121
1,2-DICHLOROETHANE-D4	110	70 - 120

Data Qualifier Key:
 U - none detected
 J - estimated value (less than the sample quantitation limit)
 B - analyte is found in the associated blank as well as in the sample
 'blank' - positive result
 * - Surrogate recovery is outside QC limit
 D - compound identified at a secondary dilution factor
 E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1047-MSD
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033
 UNITS: % REC

	Result		Result
Phenol	73	Acenaphthene	112
2-Chlorophenol	78	4-Nitrophenol	62
1,4-Dichlorobenzene	67	2,4-Dinitrotoluene	74
N-Nitroso-di-n-propylamine	86	Pentachlorophenol	62
1,2,4-Trichlorobenzene	83	Pyrene	89
4-Chloro-3-methylphenol	81		

Surrogates	% Recovery	Limits
Nitrobenzene-D5	74	23 - 120
2-Fluorobiphenyl	91	30 - 115
Terphenyl-D14	73	18 - 137
Phenol-D5	67	24 - 113
2-Fluorophenol	63	25 - 121
2,4,6-Tribromophenol	76	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1047-MSD
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 113.636
 UNITS: % REC

	Result	Method Reference	Analysis Date
Arsenic	44.7	7060	11/12/93
Aluminum	1090	6010	11/13/93
Barium	0	6010	11/13/93
Beryllium	84	6010	11/13/93
Cadmium	87	6010	11/13/93
Chromium	92	6010	11/13/93
Copper	93	6010	11/13/93
Iron	833	6010	11/13/93
Nickel	87	6010	11/13/93
Lead	0	7421	11/12/93
Mercury	104	7471	11/07/93
Silver	87	6010	11/13/93
Zinc	87	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES, affecting all soil samples in batch. LCS / LCSD results and method Quality Control were acceptable.

Duplicate analysis outside control limits due to matrix interference on barium and iron analysis by ICPES, affecting all soil samples in batch. LCS/LCSD results & method QC were acceptable.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1048
SAMPLE DATE: 10/25/93 14:30:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.50U	0.50 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1048
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

			Reporting						Reporting		
			Result	Qual	Limit				Result	Qual	Limit
Chloromethane	10	U	10			1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10			trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10			Trichloroethene	5	U	5		
Chloroethane	10	U	10			Chlorodibromomethane	5	U	5		
Methylene chloride	1.4	J	10			1,1,2-Trichloroethane	5	U	5		
Acetone	13	JB	100			Benzene	5	U	5		
Carbon disulfide	5	U	5			cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5			2-Chloroethylvinyl ether	10	U	10		
1-Dichloroethane	5	U	5			Bromoform	5	U	5		
trans-1,2-Dichloroethene	5	U	5			2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5			4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5			Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5			1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	4.0	J	100			Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5			Chlorobenzene	5	U	5		
Carbon tetrachloride	5	U	5			Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10			Styrene	5	U	5		
Dichlorobromomethane	5	U	5			Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	109	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1048
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting		Reporting
	Result	Qual	Limit	Result Qual Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene 0.330 U 0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline 0.825 U 0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene 0.330 U 0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol 0.825 U 0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol 0.825 U 0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran 0.330 U 0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene 0.330 U 0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate 0.330 U 0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether 0.330 U 0.330
ethylphenol	0.330	U	0.330	Fluorene 0.330 U 0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline 0.825 U 0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol 0.825 U 0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1) 0.330 U 0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether 0.330 U 0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene 0.330 U 0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol 0.825 U 0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene 0.330 U 0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene 0.330 U 0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate 0.330 U 0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene 0.330 U 0.330
Naphthalene	0.330	U	0.330	Pyrene 0.330 U 0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate 0.330 U 0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine 0.330 U 0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene 0.330 U 0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene 0.330 U 0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate 0.330 U 0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate 0.330 U 0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene 0.330 U 0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene 0.330 U 0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene 0.330 U 0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene 0.330 U 0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene 0.330 U 0.330
				Benzo(g,h,i)perylene 0.330 U 0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1048
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	69	23 - 120
2-Fluorobiphenyl	84	30 - 115
Terphenyl-D14	73	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	58	25 - 121
2,4,6-Tribromophenol	72	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1048
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 117.647
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.8	N	1.1	7060	11/12/93
Aluminum	7400	N	24	6010	11/13/93
Barium	390	N*	24	6010	11/13/93
Beryllium	1.2		0.59	6010	11/13/93
Cadmium	0.46		0.59	6010	11/13/93
Chromium	11		1.2	6010	11/13/93
Copper	6.0		2.9	6010	11/13/93
Iron	8000	N*	12	6010	11/13/93
Nickel	9.3		4.7	6010	11/13/93
Lead	4.6	N	0.34	7421	11/12/93
Mercury	0.020	U	0.020	7471	11/07/93
Silver	0.023		1.2	6010	11/13/93
Zinc	15		2.4	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1049
SAMPLE DATE: 10/25/93 14:40:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.50U	0.50 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1049
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

			Reporting						Reporting		
	Result	Qual	Limit				Result	Qual	Limit		
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5				
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5				
Vinyl chloride	10	U	10	Trichloroethene	5	U	5				
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5				
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5				
Acetone	9.4	JB	100	Benzene	5	U	5				
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5				
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10				
1,1-Dichloroethane	5	U	5	Bromoform	5	U	5				
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50				
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50				
Chloroform	5	U	5	Tetrachloroethene	5	U	5				
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5				
2-Butanone	100	U	100	Toluene	5	U	5				
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5				
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5				
Vinyl acetate	10	U	10	Styrene	5	U	5				
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5				

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	99	74 - 121
1,2-DICHLOROETHANE-D4	110	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1049
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

Reporting			Reporting		
Result	Qual	Limit	Result	Qual	Limit
Phenol	0.330	U 0.330	2,6-Dinitrotoluene	0.330	U 0.330
bis(2-Chloroethyl)ether	0.330	U 0.330	3-Nitroaniline	0.825	U 0.825
2-Chlorophenol	0.330	U 0.330	Acenaphthene	0.330	U 0.330
1,3-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrophenol	0.825	U 0.825
1,4-Dichlorobenzene	0.330	U 0.330	4-Nitrophenol	0.825	U 0.825
Benzyl alcohol	0.330	U 0.330	Dibenzofuran	0.330	U 0.330
1,2-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrotoluene	0.330	U 0.330
2-Methylphenol	0.330	U 0.330	Diethylphthalate	0.330	U 0.330
3(2-Chloroisopropyl)ether	0.330	U 0.330	4-Chlorophenyl-phenylether	0.330	U 0.330
4-Methylphenol	0.330	U 0.330	Fluorene	0.330	U 0.330
N-Nitroso-di-n-propylamine	0.330	U 0.330	4-Nitroaniline	0.825	U 0.825
Hexachloroethane	0.330	U 0.330	4,6-Dinitro-2-methylphenol	0.825	U 0.825
Nitrobenzene	0.330	U 0.330	N-Nitrosodiphenylamine (1)	0.330	U 0.330
Isophorone	0.330	U 0.330	4-Bromophenyl-phenylether	0.330	U 0.330
2-Nitrophenol	0.330	U 0.330	Hexachlorobenzene	0.330	U 0.330
2,4-Dimethylphenol	0.330	U 0.330	Pentachlorophenol	0.825	U 0.825
Benzoic Acid	0.330	U 0.330	Phenanthrene	0.330	U 0.330
bis(2-Chloroethoxy)methane	0.330	U 0.330	Anthracene	0.330	U 0.330
2,4-Dichlorophenol	0.330	U 0.330	Di-n-butylphthalate	0.330	U 0.330
1,2,4-Trichlorobenzene	0.330	U 0.330	Fluoranthene	0.330	U 0.330
Naphthalene	0.330	U 0.330	Pyrene	0.330	U 0.330
4-Chloroaniline	0.330	U 0.330	Butylbenzylphthalate	0.330	U 0.330
Hexachlorobutadiene	0.330	U 0.330	3,3'-Dichlorobenzidine	0.330	U 0.330
4-Chloro-3-methylphenol	0.330	U 0.330	Benzo(a)anthracene	0.330	U 0.330
2-Methylnaphthalene	0.330	U 0.330	Chrysene	0.330	U 0.330
Hexachlorocyclopentadiene	0.330	U 0.330	bis(2-Ethylhexyl)phthalate	0.330	U 0.330
2,4,6-Trichlorophenol	0.330	U 0.330	Di-n-octylphthalate	0.330	U 0.330
2,4,5-Trichlorophenol	0.825	U 0.825	Benzo(b)fluoranthene	0.330	U 0.330
2-Chloronaphthalene	0.330	U 0.330	Benzo(k)fluoranthene	0.330	U 0.330
2-Nitroaniline	0.825	U 0.825	Benzo(a)pyrene	0.330	U 0.330
Dimethylphthalate	0.330	U 0.330	Indeno(1,2,3-cd)pyrene	0.330	U 0.330
Acenaphthylene	0.330	U 0.330	Dibenzo(a,h)anthracene	0.330	U 0.330
			Benzo(g,h,i)perylene	0.330	U 0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: AEM HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1049
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	72	23 - 120
2-Fluorobiphenyl	86	30 - 115
Terphenyl-D14	74	18 - 137
Phenol-D5	67	24 - 113
2-Fluorophenol	58	25 - 121
2,4,6-Tribromophenol	75	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1049**
 SAMPLE DATE: **10/25/93**
 SAMPLE MATRIX: **SOIL**
 DILUTION FACTOR (6010): **103.092**
 UNITS: **MG/KG**

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	3.3	N	0.86	7060	11/12/93
Aluminum	9500	N	21	6010	11/13/93
Barium	690	N*	21	6010	11/13/93
Beryllium	1.6		0.52	6010	11/13/93
Cadmium	0.26		0.52	6010	11/13/93
Chromium	13		1.0	6010	11/13/93
Copper	7.9		2.6	6010	11/13/93
Iron	12000	N*	10	6010	11/13/93
Nickel	11		4.1	6010	11/13/93
Lead	8.5	N	1.0	7421	11/12/93
Mercury	0.022	U	0.022	7471	11/07/93
Silver	0.26		1.0	6010	11/13/93
Zinc	15		2.1	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1050
SAMPLE DATE: 10/25/93 15:50:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1050
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	1.5	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	9.2	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,1-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	104	81 - 117
BROMOFLUOROBENZENE	95	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: KPA8270

SAMPLE ID: A1050
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

Reporting			Reporting		
	Result	Qual Limit		Result	Qual Limit
Phenol	0.330	U 0.330	2,6-Dinitrotoluene	0.330	U 0.330
bis(2-Chloroethyl)ether	0.330	U 0.330	3-Nitroaniline	0.825	U 0.825
2-Chlorophenol	0.330	U 0.330	Acenaphthene	0.330	U 0.330
1,3-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrophenol	0.825	U 0.825
1,4-Dichlorobenzene	0.330	U 0.330	4-Nitrophenol	0.825	U 0.825
Benzyl alcohol	0.330	U 0.330	Dibenzofuran	0.330	U 0.330
1,2-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrotoluene	0.330	U 0.330
2-Methylphenol	0.330	U 0.330	Diethylphthalate	0.330	U 0.330
bis(2-Chloroisopropyl)ether	0.330	U 0.330	4-Chlorophenyl-phenylether	0.330	U 0.330
2-Ethylphenol	0.330	U 0.330	Fluorene	0.330	U 0.330
N-Nitroso-di-n-propylamine	0.330	U 0.330	4-Nitroaniline	0.825	U 0.825
Hexachloroethane	0.330	U 0.330	4,6-Dinitro-2-methylphenol	0.825	U 0.825
Nitrobenzene	0.330	U 0.330	N-Nitrosodiphenylamine (1)	0.330	U 0.330
Isophorone	0.330	U 0.330	4-Bromophenyl-phenylether	0.330	U 0.330
2-Nitrophenol	0.330	U 0.330	Hexachlorobenzene	0.330	U 0.330
2,4-Dimethylphenol	0.330	U 0.330	Pentachlorophenol	0.825	U 0.825
Benzoic Acid	0.330	U 0.330	Phenanthrene	0.330	U 0.330
bis(2-Chloroethoxy)methane	0.330	U 0.330	Anthracene	0.330	U 0.330
2,4-Dichlorophenol	0.330	U 0.330	Di-n-butylphthalate	0.330	U 0.330
1,2,4-Trichlorobenzene	0.330	U 0.330	Fluoranthene	0.330	U 0.330
Naphthalene	0.330	U 0.330	Pyrene	0.330	U 0.330
4-Chloroaniline	0.330	U 0.330	Butylbenzylphthalate	0.330	U 0.330
Hexachlorobutadiene	0.330	U 0.330	3,3'-Dichlorobenzidine	0.330	U 0.330
4-Chloro-3-methylphenol	0.330	U 0.330	Benzo(a)anthracene	0.330	U 0.330
2-Methylnaphthalene	0.330	U 0.330	Chrysene	0.330	U 0.330
Hexachlorocyclopentadiene	0.330	U 0.330	bis(2-Ethylhexyl)phthalate	0.330	U 0.330
2,4,6-Trichlorophenol	0.330	U 0.330	Di-n-octylphthalate	0.330	U 0.330
2,4,5-Trichlorophenol	0.825	U 0.825	Benzo(b)fluoranthene	0.330	U 0.330
2-Chloronaphthalene	0.330	U 0.330	Benzo(k)fluoranthene	0.330	U 0.330
2-Nitroaniline	0.825	U 0.825	Benzo(a)pyrene	0.330	U 0.330
Dimethylphthalate	0.330	U 0.330	Indeno(1,2,3-cd)pyrene	0.330	U 0.330
Acenaphthylene	0.330	U 0.330	Dibenzo(a,h)anthracene	0.330	U 0.330
			Benzo(g,h,i)perylene	0.330	U 0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: ABM HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1050
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	60	23 - 120
2-Fluorobiphenyl	78	30 - 115
Terphenyl-D14	63	18 - 137
Phenol-D5	62	24 - 113
2-Fluorophenol	53	25 - 121
2,4,6-Tribromophenol	60	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1050
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 97.0873
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.3	N	0.86	7060	11/12/93
Aluminum	15000	N	19	6010	11/13/93
Barium	230	N*	19	6010	11/13/93
Beryllium	1.8		0.49	6010	11/13/93
Cadmium	0.98		0.49	6010	11/13/93
Chromium	14		0.97	6010	11/13/93
Copper	7.8		2.4	6010	11/13/93
Iron	12000	N*	9.7	6010	11/13/93
Nickel	11		3.9	6010	11/13/93
Lead	9.2	N	1.0	7421	11/12/93
Mercury	0.024	U	0.024	7471	11/07/93
Silver	0.079		0.97	6010	11/13/93
Zinc	21		1.9	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1051
SAMPLE DATE: 10/25/93 16:00:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.50U	0.50	MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1051
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

	Reporting				Reporting		
	Result	Qual	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	7.7	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,1-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	105	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: AEW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1051
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

	Result	Qual	Limit		Result	Qual	Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
ethylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1051
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	79	23 - 120
2-Fluorobiphenyl	91	30 - 115
Terphenyl-D14	75	18 - 137
Phenol-D5	72	24 - 113
2-Fluorophenol	61	25 - 121
2,4,6-Tribromophenol	78	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1051
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 104.166
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	11	N	3.5	7060	11/12/93
Aluminum	8700	N	21	6010	11/13/93
Barium	580	N*	21	6010	11/13/93
Beryllium	1.9		0.52	6010	11/13/93
Cadmium	0.94		0.52	6010	11/13/93
Chromium	10		1.0	6010	11/13/93
Copper	11		2.6	6010	11/13/93
Iron	12000	N*	10	6010	11/13/93
Nickel	28		4.2	6010	11/13/93
Lead	27	N	1.0	7421	11/12/93
Mercury	0.022	U	0.022	7471	11/07/93
Silver	0.69		1.0	6010	11/13/93
Zinc	18		2.1	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1052
SAMPLE DATE: 10/25/93 16:05:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u>	<u>Result</u>	<u>Reporting</u>	<u>Date</u>	<u>Method</u>
	<u>Ref</u>		<u>Limit</u> <u>Units</u>	<u>Analyzed</u>	<u>Reference</u>
Chromium VI		0.50U	0.50 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1052
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

			Reporting						Reporting		
	Result	Qual	Limit				Result	Qual	Limit		
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5				
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5				
Vinyl chloride	10	U	10	Trichloroethene	5	U	5				
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5				
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5				
Acetone	100	U	100	Benzene	5	U	5				
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5				
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10				
1,1-Dichloroethane	5	U	5	Bromoform	5	U	5				
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50				
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50				
Chloroform	5	U	5	Tetrachloroethene	5	U	5				
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5				
2-Butanone	100	U	100	Toluene	5	U	5				
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5				
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5				
Vinyl acetate	10	U	10	Styrene	5	U	5				
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5				

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	93	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1052
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting	Result	Qual	Limit	Reporting	Result	Qual	Limit
Phenol	0.330	U	0.330			2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330			3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330			Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330			2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330			4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330			Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330			2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330			Diethylphthalate	0.330	U	0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330			4-Chlorophenyl-phenylether	0.330	U	0.330
ethylphenol	0.330	U	0.330			Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330			4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330			4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330			N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330			4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330			Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330			Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330			Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330			Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330			Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330			Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330			Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330			Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330			3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330			Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330			Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330			bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330			Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825			Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330			Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825			Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330			Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330			Dibenzo(a,h)anthracene	0.330	U	0.330
						Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: 83-10-336

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1052
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	74	23 - 120
2-Fluorobiphenyl	89	30 - 115
Terphenyl-D14	73	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	61	25 - 121
2,4,6-Tribromophenol	76	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

(512) 892-6684

409832-003-01

Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1052

SAMPLE DATE: 10/25/93

SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 89.2857

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.6	N	1.1	7060	11/12/93
Aluminum	9000	N	18	6010	11/13/93
Barium	150	N*	18	6010	11/13/93
Beryllium	1.5		0.45	6010	11/13/93
Cadmium	0.79		0.45	6010	11/13/93
Chromium	11		0.89	6010	11/13/93
Copper	8.0		2.2	6010	11/13/93
Iron	9400	N*	8.9	6010	11/13/93
Nickel	12		3.6	6010	11/13/93
Lead	4.6	N	0.32	7421	11/12/93
Mercury	0.023	U	0.023	7471	11/07/93
Silver	0.28		0.89	6010	11/13/93
Zinc	19		1.8	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1053
SAMPLE DATE: 10/25/93 16:25:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u>	<u>Result</u>	<u>Reporting</u>	<u>Date</u>	<u>Method</u>
	<u>Ref</u>		<u>Limit</u> <u>Units</u>	<u>Analyzed</u>	<u>Reference</u>
Chromium VI		0.50U	0.50 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1053
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	1.3	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	5.2	BJ	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,1-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1053
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting			Reporting	
		Result	Qual	Limit	Result	Qual
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U 0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U 0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U 0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U 0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U 0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U 0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U 0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U 0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U 0.330
4-Methylphenol	0.330	U	0.330	Fluorene	0.330	U 0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U 0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U 0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U 0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U 0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U 0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U 0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U 0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U 0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U 0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U 0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U 0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U 0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U 0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U 0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U 0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U 0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U 0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U 0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U 0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U 0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U 0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U 0.330
				Benzo(g,h,i)perylene	0.330	U 0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1053
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	67	23 - 120
2-Fluorobiphenyl	85	30 - 115
Terphenyl-D14	70	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	58	25 - 121
2,4,6-Tribromophenol	64	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: Metals
METHOD REFERENCE: EPA6010

SAMPLE ID: A1053
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL
DILUTION FACTOR (6010): 106.382
UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	5.0	N	3.7	7060	11/15/93
Aluminum	9100	N	21	6010	11/13/93
Barium	760	N*	21	6010	11/13/93
Beryllium	1.6		0.53	6010	11/13/93
Cadmium	0.45		0.53	6010	11/13/93
Chromium	13		1.1	6010	11/13/93
Copper	8.0		2.7	6010	11/13/93
Iron	11000	N*	11	6010	11/13/93
Nickel	12		4.3	6010	11/13/93
Lead	8.9	N	1.1	7421	11/12/93
Mercury	0.023	U	0.023	7471	11/07/93
Silver	0.32		1.1	6010	11/13/93
Zinc	16		2.1	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1054
SAMPLE DATE: 10/25/93 16:25:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.50U	0.50 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1054
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	8.8	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,1-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	4.4	J	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	100	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	113	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1054
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

			Reporting			Reportin		
	Result	Qual	Limit			Result	Qual	Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene		0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline		0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene		0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol		0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol		0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran		0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene		0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate		0.330	U	0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether		0.330	U	0.330
ethylphenol	0.330	U	0.330	Fluorene		0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline		0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol		0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)		0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether		0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene		0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol		0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene		0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene		0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate		0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene		0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene		0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate		0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine		0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene		0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene		0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate		0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate		0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene		0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene		0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene		0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene		0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene		0.330	U	0.330
				Benzo(g,h,i)perylene		0.330	U	0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1054
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	70	23 - 120
2-Fluorobiphenyl	81	30 - 115
Terphenyl-D14	65	18 - 137
Phenol-D5	66	24 - 113
2-Fluorophenol	58	25 - 121
2,4,6-Tribromophenol	62	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1054
 SAMPLE DATE: 10/25/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 97.0873
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.87	UN	0.87	7060	11/12/93
Aluminum	8300	N	19	6010	11/13/93
Barium	530	N*	19	6010	11/13/93
Beryllium	1.6		0.49	6010	11/13/93
Cadmium	0.10		0.49	6010	11/13/93
Chromium	12		0.97	6010	11/13/93
Copper	8.4		2.4	6010	11/13/93
Iron	10000	N*	9.7	6010	11/13/93
Nickel	13		3.9	6010	11/13/93
Lead	8.8	N	1.0	7421	11/12/93
Mercury	0.020	U	0.020	7471	11/07/93
Silver	0.14		0.97	6010	11/13/93
Zinc	15		1.9	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1055
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 11/01/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

				Reporting							Reporting		
				Result	Qual	Limit					Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5						
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5						
Vinyl chloride	10	U	10	Trichloroethene	5	U	5						
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5						
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5						
Acetone	100	U	100	Benzene	5	U	5						
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5						
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10						
1,1-Dichloroethane	5	U	5	Bromoform	5	U	5						
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50						
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50						
Chloroform	5	U	5	Tetrachloroethene	5	U	5						
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5						
2-Butanone	100	U	100	Toluene	5	U	5						
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5						
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5						
Vinyl acetate	10	U	10	Styrene	5	U	5						
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5						

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	104	86 - 115
1,2-DICHLOROETHANE-D4	108	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

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Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: Grain Size Distriubtion
METHOD REFERENCE: ASTM_D422

SAMPLE ID: J5420
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Form not available.

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Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: Moisture Content
METHOD REFERENCE: ASTM_D216

SAMPLE ID: J5420
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Form not available.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: LAB BLANK #1
SAMPLE DATE:
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.010U	0.010	MG/KG	11/04/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1
 SAMPLE DATE: not spec
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/04/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	4.0	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,1-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	104	81 - 117
BROMOFLUOROBENZENE	98	74 - 121
1,2-DICHLOROETHANE-D4	105	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: AEN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
 SAMPLE DATE: not spec
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/13/93
 DILUTION FACTOR: 0.033

UNITS: MG/KG Reporting
 Result Qual Limit

	Result	Qual	Limit		Result	Qual	Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
ethylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	82	23 - 120
2-Fluorobiphenyl	99	30 - 115
Terphenyl-D14	82	18 - 137
Phenol-D5	72	24 - 113
2-Fluorophenol	61	25 - 121
2,4,6-Tribromophenol	83	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1
 SAMPLE DATE: not spec
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 1.0
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/13/93
Barium	0.20	U	0.20	6010	11/13/93
Beryllium	0.0050	U	0.0050	6010	11/13/93
Cadmium	0.0050	U	0.0050	6010	11/13/93
Chromium	0.010	U	0.010	6010	11/13/93
Copper	0.025	U	0.025	6010	11/13/93
Iron	0.10	U	0.10	6010	11/13/93
Nickel	0.040	U	0.040	6010	11/13/93
Lead	0.0030	U	0.0030	7421	11/12/93
Mercury	0.00020	U	0.00020	7471	11/07/93
Silver	0.010	U	0.010	6010	11/13/93
Zinc	0.020	U	0.020	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1
 SAMPLE DATE:
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 11/01/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

			Reporting						Reporting		
			Result	Qual	Limit				Result	Qual	Limit
Chloromethane	10	U	10			1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10			trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10			Trichloroethene	5	U	5		
Chloroethane	10	U	10			Chlorodibromomethane	5	U	5		
Methylene chloride	4.2	J	10			1,1,2-Trichloroethane	5	U	5		
Acetone	100	U	100			Benzene	5	U	5		
Carbon disulfide	5	U	5			cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5			2-Chloroethylvinyl ether	10	U	10		
1,1-Dichloroethane	5	U	5			Bromoform	5	U	5		
trans-1,2-Dichloroethene	5	U	5			2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5			4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5			Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5			1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	4.1	J	100			Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5			Chlorobenzene	5	U	5		
Carbon tetrachloride	5	U	5			Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10			Styrene	5	U	5		
Dichlorobromomethane	5	U	5			Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	101	86 - 115
1,2-DICHLOROETHANE-D4	105	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

SAMPLE ID: LAB BLANK 2
SAMPLE DATE:
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.010U	0.010 MG/KG	11/05/93	EPA7196

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Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

Referenced notes for this work order:

B310336 18A J5420

GEOTECHNICAL DATA REPORTED UNDER SEPARATE COVER.

B310336 18B J5420

GEOTECHNICAL DATA REPORTED UNDER SEPARATE COVER.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME ICP Metals

TEST CODE 6010

Metals by ICP

Inductively coupled emission spectroscopy according to Method 6010, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

Hazardous Substance
List Volatiles

Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance
List Extractables

Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction followed by GC/MS analysis.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS_GF

Arsenic
Graphite
Furnace

Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes, EPA-600/4-82-055, December 1982.

TEST NAME Cation Exchange Capacity TEST CODE CEC_A

Cation exchange
Capacity

Part 2: Chemical and microbiological properties method 57-3. American Society of Agronomy, Methods of soil Analysis 2nd Edition.

TEST NAME Chromium VI

TEST CODE CR_VI

Chromium VI

Method 7196, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Colorimetric analysis. Equivalent to Standard Methods 3500-Cr D.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME Grain Size Distriubtion TEST CODE GRAIN

Method not available.

TEST NAME Mercury TEST CODE HG_AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid
Wastes, Third Edition. Cold vapor atomic absorption.
Method 7470 is used for water.

Method 245.5-"Technical Additions to Methods for
Chemical Analysis of Water and Wastes,"
EPA-600/4-82-055, December 1982.

TEST NAME Metals TEST CODE ICPTK2

Method not available.

TEST NAME Moisture Content TEST CODE MOIS_G

Method not available.

TEST NAME Lead - Graphite Furnace TEST CODE PB_GF

Lead
Graphite
Furnace

EPA 7421, SW-846, Test Methods for Evaluating Solid
Wastes, Third Edition.
EPA 239.2-Technical Additions to Methods for Chemical
Analysis of Water and Wastes," EPA-600/4-82-055,
December 1982.

TEST NAME Vertical Permeability TEST CODE V_PERM

Method not available.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-336

TEST NAME GFAA Digestion - Soil TEST CODE Z3050F

Soil Digestion Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for Graphite Furnace/Flame AA analysis.

TEST NAME ICPES Digestion - Soil TEST CODE Z3050P

Soil Digestion Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for ICPES analysis. Equivalent to Method 3050A, SW-846 Update I, July 1992.



INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD*

409832.03.01

Project Name/No. 1 Tinker AFB 5001
Sample Team Members 2 Andrew Gordon
Kyle Kirschmann

Samples Shipment Date 7 10-25-93
Lab Destination 8 ITAS-Austin

Bill to: 5 409832.03.01
O.G. 5001

Profit Center No. 3 3527

Lab Contact 9 Karman Deane

Project Manager 4 Timmy Taylor

Project Contact/Phone 12 Don McGregg
405 736-8260

Purchase Order No. 6 409832.03.01 5001

Report to: 10 Jim Jennings
IT-Austin-ES

Required Report Date 11 15 Days

ONE CONTAINER PER LINE

Sample Number	Sample Description/Type	Date/Time Collected	Container Type	Sample Volume	Pre-servative	Requested Testing Program	Condition on Receipt	Disposal Record No.
A1041	Trip Blank	10-27-93 1700	9955 Clear	40ml	HCL COOL	8240	600342 704	63244102 96
A1042	Soil	10-25-93 1110		125ml	COOL	8240	10/25/93	10/25/93 170042
A1042		10-25-93 1110		500ml		8270, 600/700		
A1043		10-25-93 1120		125ml		8240		
A1043		10-25-93 1120		500ml		5008270, 600/700		
A1044		10-25-93 1125		125ml		8240		
A1044		10-25-93 1125		500ml		8270, 600/700		

Special Instructions: 23

Possible Hazard Identification: 24

Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: 25

Return to Client ☐ Disposal by Lab ☒ Archive ☐ (mos.)

Turnaround Time Required: 26

Normal ☒ Rush ☐

QC Level: 27

I ☒ II ☐ III ☐

Project Specific (Specify):

1. Relinquished by 28 (Signature/Affiliation)

Date: 10-25-93
Time: 1800

1. Received by 28 (Signature/Affiliation)

Date: 10/26/93
Time: 0922

2. Relinquished by (Signature/Affiliation)

Date:
Time:

2. Received by (Signature/Affiliation)

Date:
Time:

3. Relinquished by (Signature/Affiliation)

Date:
Time:

3. Received by (Signature/Affiliation)

Date:
Time:

Comments: 29



INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYSIS R. JEST AND
CHAIN OF CUSTODY RECORD (cont.)*

3310336

Reference Document No. 313510
Page 2 of 3

Project Name TAFB-5001

Project No. 40832.0301

Samples Shipment Date 10-25-93

White: To accompany samples

Yellow: Field copy

* See back of form for special instructions

ONE CONTAINER PER LINE

Sample 14 Number	Sample 15 Description/Type	Date/Time Collected	Container Type	Sample 18 Volume	Pre-19 servative	Requested Testing 20 Program	Condition on 21 Receipt	Disposal 22 Record No.
A1045	Soil	10-25-93 1135	500	500ml	COOL	8240	Good, 100% RWR	
A1045		10-25-93 1135	500	500ml		8270, 600/700		
A1046		10-25-93 1415	125	125ml		8240		
A1046		10-25-93 1415	500	500ml		8270, 600/700		
A1047 msb		10-25-93 1420	125	125ml		8240		
A1047 msb		10-25-93 1420	500	500ml		8270, 600/700		
A1048		10-25-93 1420	125	125ml		8240		
A1048		10-25-93 1430	500	500ml		8270, 600/700		
A1049		10-25-93 1440	125	125ml		8240		
A1049		10-25-93 1440	500	500ml		8270, 600/700		
A1050		10-25-93 1550	125	125ml		8240		
A1050		10-25-93 1550	500	500ml		8270, 600/700		
A1051		10-25-93 1600	125	125ml		8240		
A1051		10-25-93 1600	500	500ml		8270, 600/700		
A1052		10-25-93 1605	125	125ml		8240		
A1052		10-25-93 1605	500	500ml		8270, 600/700		
A1053		10-25-93 1625	125	125ml		8240		
A1053		10-25-93 1625	500	500ml		8270, 600/700		
A1054		10-25-93 1625	125	125ml		8240		
A1054		10-25-93 1625	500	500ml		8270, 600/700		



ANALYSIS RESULTS

313570

105 B-500

Project No.

409837.0301

Samples Shipment Date

10-25-93

ONE CONTAINER PER LINE

[illegible]

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1042

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	87.7
	Chromium VI	B310336-19B	1104CR_VI1	11/04/93	11/04/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	110
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	87.7

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1043

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	116
	Chromium VI	B310336-19B	1104CR_VI1	11/04/93	11/04/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	109
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	116

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1044

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	111
	Chromium VI	B310336-19B	1104CR_VI1	11/04/93	11/04/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	115
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	111

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1045

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
05B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	103
	Chromium VI	B310336-19B	1104CR_VI1	11/04/93	11/04/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	111
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	103

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1046

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
06B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	94.3
	Chromium VI	B310336-19B	1104CR_VI1	11/04/93	11/04/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	108
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	94.3

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1047

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
07B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	85.5
	Chromium VI	B310336-19B	1104CR_VI	11/04/93	11/04/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	112
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	85.5

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1047-MS

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
08B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	103
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	120
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	103

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1047-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
09B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	104
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	115
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	104

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1048

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
10B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	112
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	100
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	112

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1049

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
11B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	86.2
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	112
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	345

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1050

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
12B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	85.5
	Chromium VI	B310336-21A	1105CR VI1	11/05/93	11/05/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	119
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	342

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1051

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
13B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	348
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	108
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	348

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1052

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
14B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	106
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	114
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	106

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1053

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
15B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/16/93	367
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	115
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	367

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : A1054

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
16B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	87
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	101
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	348

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : LAB BLANK #1

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
19B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	1.0
	Chromium VI	B310336-19B	1104CR_VI1	11/04/93	11/04/93	1.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	1.0
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	1.0

Auxiliary Data Summary

12/03/93

Work order : B310336

Sample ID : LAB BLANK 2

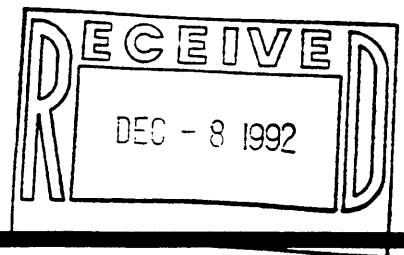
FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
	21A Chromium VI	B310339-21A	1105CR_VI1	11/05/93	11/05/93	1.0

Routed to K.E.C.F. TL 12/9/93



INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYTICAL SERVICES



CERTIFICATE OF ANALYSIS

IT CORPORATION
1250 CAPITAL OF TX HWY
BLDG. 3, SUITE 200
AUSTIN, TX 78746-6443
TIM JENNINGS

Date: 12/07/93

Work Order: B3-10-382

This is the Certificate of Analysis for the following samples:

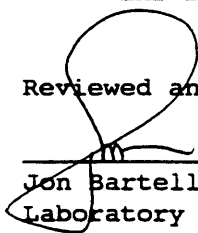
Client Work ID: D.O.5001	409832-003-01
Date Received: 10/27/93	
Number of Samples: 14	
Sample Type: SOIL/WATER	

I. Introduction

Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
A1058	B3-10-382-01
A1059	B3-10-382-02
A1060	B3-10-382-03
A1060-MS	B3-10-382-04
A1060-MSD	B3-10-382-05
A1061	B3-10-382-06
A1062	B3-10-382-07
A1063	B3-10-382-08
A1064	B3-10-382-09
A1065	B3-10-382-10
A1056	B3-10-382-11
A1057	B3-10-382-12
LAB BLANK	B3-10-382-13

Reviewed and Approved:


Jon Bartell
Laboratory Director

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

Samples, continued from above:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
LAB BLANK	B3-10-382-14

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512) 892-6684
Work Order: B3-10-382

SAMPLE ID: A1058
SAMPLE DATE: 10/26/93 08:50:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1058
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

				Reporting			Reporting		
				Result	Qual	Limit	Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10	Trichloroethene	5	U	5		
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5		
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5		
Acetone	10	JB	100	Benzene	5	U	5		
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10		
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5		
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5	Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	100	U	100	Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5		
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10	Styrene	5	U	5		
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	110	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	110	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1058
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/03/93
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting			Reporting	
		Result	Qual	Limit	Result	Qual
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U 0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U 0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U 0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U 0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U 0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U 0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U 0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U 0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U 0.330
2-Methylphenol	0.330	U	0.330	Fluorene	0.330	U 0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U 0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U 0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U 0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U 0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U 0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U 0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U 0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U 0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U 0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U 0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U 0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U 0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U 0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U 0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U 0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U 0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U 0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U 0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U 0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U 0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U 0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U 0.330
				Benzo(g,h,i)perylene	0.330	U 0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1058
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	78	23 - 120
2-Fluorobiphenyl	78	30 - 115
Terphenyl-D14	77	18 - 137
Phenol-D5	81	24 - 113
2-Fluorophenol	70	25 - 121
2,4,6-Tribromophenol	81	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1058
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 105.263
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	3.1		0.91	7060	11/15/93
Aluminum	13000	N	21	6010	11/13/93
Barium	210	N*	21	6010	11/13/93
Beryllium	0.92		0.53	6010	11/13/93
Cadmium	0.57		0.53	6010	11/13/93
Chromium	12		1.1	6010	11/13/93
Copper	8.2	N	2.6	6010	11/13/93
Iron	12000	N	11	6010	11/13/93
Nickel	10		4.2	6010	11/13/93
Lead	11	N	1.1	7421	11/15/93
Mercury	0.024	U	0.024	7471	11/15/93
Silver	0.57		1.1	6010	11/13/93
Zinc	21		2.1	6010	11/13/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%),
 while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1059
SAMPLE DATE: 10/26/93 09:00:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.50U	0.50 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1059
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

			Reporting						Reporting		
			Result	Qual	Limit				Result	Qual	Limit
Chloromethane	10	U	10			1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10			trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10			Trichloroethene	5	U	5		
Chloroethane	10	U	10			Chlorodibromomethane	5	U	5		
Methylene chloride	10	U	10			1,1,2-Trichloroethane	5	U	5		
Acetone	100	U	100			Benzene	5	U	5		
Carbon disulfide	5	U	5			cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5			2-Chloroethylvinyl ether	10	U	10		
1,2-Dichloroethane	5	U	5			Bromoform	5	U	5		
trans-1,2-Dichloroethene	5	U	5			2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5			4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5			Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5			1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	100	U	100			Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5			Chlorobenzene	5	U	5		
Carbon tetrachloride	5	U	5			Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10			Styrene	5	U	5		
Dichlorobromomethane	5	U	5			Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	107	81 - 117
BROMOFLUOROBENZENE	102	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1059
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/03/93
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting	Result	Qual	Limit	Reporting	Result	Qual	Limit
Phenol	0.330	U	0.330			2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330			3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330			Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330			2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330			4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330			Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330			2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330			Diethylphthalate	0.330	U	0.330
is(2-Chloroisopropyl)ether	0.330	U	0.330			4-Chlorophenyl-phenylether	0.330	U	0.330
Methylphenol	0.330	U	0.330			Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330			4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330			4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330			N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330			4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330			Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330			Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330			Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330			Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330			Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330			Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330			Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330			Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330			3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330			Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330			Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330			bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330			Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825			Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330			Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825			Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330			Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330			Dibenzo(a,h)anthracene	0.330	U	0.330
						Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1059
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	76	23 - 120
2-Fluorobiphenyl	76	30 - 115
Terphenyl-D14	84	18 - 137
Phenol-D5	81	24 - 113
2-Fluorophenol	69	25 - 121
2,4,6-Tribromophenol	82	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1059
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 114.942
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.4		1.0	7060	11/15/93
Aluminum	8400	N	23	6010	11/13/93
Barium	210	N*	23	6010	11/13/93
Beryllium	0.86		0.57	6010	11/13/93
Cadmium	1.5		0.57	6010	11/13/93
Chromium	12		1.1	6010	11/13/93
Copper	7.8	N	2.9	6010	11/13/93
Iron	16000	N	11	6010	11/13/93
Nickel	15		4.6	6010	11/13/93
Lead	4.9	N	0.31	7421	11/15/93
Mercury	0.027	U	0.027	7471	11/15/93
Silver	0.41		1.1	6010	11/13/93
Zinc	17		2.3	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1060
SAMPLE DATE: 10/26/93 09:10:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.50U	0.50	MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX

409832-003-01 (512) 892-6684
 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1060
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	9.6	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	5	U	5	Bromoform	5	U	5
ns-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	4.2	JB	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	105	81 - 117
BROMOFLUOROBENZENE	101	74 - 121
1,2-DICHLOROETHANE-D4	110	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: AEW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1060
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/03/93
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

Reporting			Reporting		
	Result	Qual Limit		Result	Qual Limit
Phenol	0.330	U 0.330	2,6-Dinitrotoluene	0.330	U 0.330
bis(2-Chloroethyl)ether	0.330	U 0.330	3-Nitroaniline	0.825	U 0.825
2-Chlorophenol	0.330	U 0.330	Acenaphthene	0.330	U 0.330
1,3-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrophenol	0.825	U 0.825
1,4-Dichlorobenzene	0.330	U 0.330	4-Nitrophenol	0.825	U 0.825
Benzyl alcohol	0.330	U 0.330	Dibenzofuran	0.330	U 0.330
1,2-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrotoluene	0.330	U 0.330
2-Methylphenol	0.330	U 0.330	Diethylphthalate	0.330	U 0.330
(2-Chloroisopropyl)ether	0.330	U 0.330	4-Chlorophenyl-phenylether	0.330	U 0.330
4-Methylphenol	0.330	U 0.330	Fluorene	0.330	U 0.330
N-Nitroso-di-n-propylamine	0.330	U 0.330	4-Nitroaniline	0.825	U 0.825
Hexachloroethane	0.330	U 0.330	4,6-Dinitro-2-methylphenol	0.825	U 0.825
Nitrobenzene	0.330	U 0.330	N-Nitrosodiphenylamine (1)	0.330	U 0.330
Isophorone	0.330	U 0.330	4-Bromophenyl-phenylether	0.330	U 0.330
2-Nitrophenol	0.330	U 0.330	Hexachlorobenzene	0.330	U 0.330
2,4-Dimethylphenol	0.330	U 0.330	Pentachlorophenol	0.825	U 0.825
Benzoic Acid	0.330	U 0.330	Phenanthrene	0.330	U 0.330
bis(2-Chloroethoxy)methane	0.330	U 0.330	Anthracene	0.330	U 0.330
2,4-Dichlorophenol	0.330	U 0.330	Di-n-butylphthalate	0.330	U 0.330
1,2,4-Trichlorobenzene	0.330	U 0.330	Fluoranthene	0.330	U 0.330
Naphthalene	0.330	U 0.330	Pyrene	0.330	U 0.330
4-Chloroaniline	0.330	U 0.330	Butylbenzylphthalate	0.330	U 0.330
Hexachlorobutadiene	0.330	U 0.330	3,3'-Dichlorobenzidine	0.330	U 0.330
4-Chloro-3-methylphenol	0.330	U 0.330	Benzo(a)anthracene	0.330	U 0.330
2-Methylnaphthalene	0.330	U 0.330	Chrysene	0.330	U 0.330
Hexachlorocyclopentadiene	0.330	U 0.330	bis(2-Ethylhexyl)phthalate	0.330	U 0.330
2,4,6-Trichlorophenol	0.330	U 0.330	Di-n-octylphthalate	0.330	U 0.330
2,4,5-Trichlorophenol	0.825	U 0.825	Benzo(b)fluoranthene	0.330	U 0.330
2-Chloronaphthalene	0.330	U 0.330	Benzo(k)fluoranthene	0.330	U 0.330
2-Nitroaniline	0.825	U 0.825	Benzo(a)pyrene	0.330	U 0.330
Dimethylphthalate	0.330	U 0.330	Indeno(1,2,3-cd)pyrene	0.330	U 0.330
Acenaphthylene	0.330	U 0.330	Dibenzo(a,h)anthracene	0.330	U 0.330
			Benzo(g,h,i)perylene	0.330	U 0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1060
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	72	23 - 120
2-Fluorobiphenyl	70	30 - 115
Terphenyl-D14	77	18 - 137
Phenol-D5	76	24 - 113
2-Fluorophenol	66	25 - 121
2,4,6-Tribromophenol	75	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1060
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 114.942
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.2		1.1	7060	11/15/93
Aluminum	5800	N	23	6010	11/13/93
Barium	330	N*	23	6010	11/13/93
Beryllium	0.50		0.57	6010	11/13/93
Cadmium	0.58		0.57	6010	11/13/93
Chromium	8.8		1.1	6010	11/13/93
Copper	5.8	N	2.9	6010	11/13/93
Iron	6500	N	11	6010	11/13/93
Nickel	9.8		4.6	6010	11/13/93
Lead	5.1	N	0.32	7421	11/15/93
Mercury	0.021	U	0.021	7471	11/15/93
Silver	0.33		1.1	6010	11/13/93
Zinc	15		2.3	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Duplicate analysis outside control limits due to matrix interference on barium analysis by ICPE. LCS / LCSD results and method Quality Control were acceptable.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1060-MS
SAMPLE DATE: 10/26/93 09:10:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		100		% REC	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1060-MS
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: % REC

	Result		Result
1,1-Dichloroethene	79	Trichloroethene	87
		Benzene	94
		Toluene	100
		Chlorobenzene	102

Surrogates	% Recovery	Limits
TOLUENE-D8	108	81 - 117
BROMOFLUOROBENZENE	104	74 - 121
1,2-DICHLOROETHANE-D4	109	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1060-MS
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/03/93
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 0.033
 UNITS: % REC

	Result		Result
Phenol	81	3-Nitroaniline	69
2-Chlorophenol	87	2,4-Dinitrophenol	72
1,4-Dichlorobenzene	93	Pentachlorophenol	90
N-Nitroso-di-n-propylamine	84	Pyrene	97
1,2,4-Trichlorobenzene	95		
4-Chloro-3-methylphenol	84		
Acenaphthylene	89		

Surrogates	% Recovery	Limits
Nitrobenzene-D5	79	23 - 120
2-Fluorobiphenyl	72	30 - 115
Terphenyl-D14	80	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	70	25 - 121
2,4,6-Tribromophenol	84	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1060-MS
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 84.0336
 UNITS: % REC

	Result	Method Reference	Analysis Date
Arsenic	86	7060	11/16/93
Aluminum	672#	6010	11/13/93
Barium	391#	6010	11/13/93
Beryllium	85	6010	11/13/93
Cadmium	88	6010	11/13/93
Chromium	90	6010	11/13/93
Copper	92	6010	11/13/93
Iron	335	6010	11/13/93
Nickel	90	6010	11/13/93
Lead	105	7421	11/15/93
Mercury	106	7471	11/15/93
Silver	87	6010	11/13/93
Zinc	84	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

#Matrix spike and % RPD for matrix spikes outside control limits due to matrix interference on aluminum and barium analysis by ICPEs. LCS / LCSD results and method Quality Control were acceptable.

% RPD for matrix spikes outside control limits due to matrix interference on copper analysis by ICPEs. LCS / LCSD results and method Quality Control were acceptable.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684

409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1060-MSD
SAMPLE DATE: 10/26/93 09:10:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		104		% REC	11/05/93	EPA7196

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
METHOD REFERENCE: EPA8240

SAMPLE ID: A1060-MSD
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0
UNITS: % REC

	Result		Result
1,1-Dichloroethene	87	Trichloroethene	93
		Benzene	103
		Toluene	113
		Chlorobenzene	110

Surrogates	% Recovery	Limits
TOLUENE-D8	108	81 - 117
BROMOFLUOROBENZENE	103	74 - 121
1,2-DICHLOROETHANE-D4	110	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1060-MSD
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/03/93
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 0.033
 UNITS: % REC

	Result		Result
Phenol	79	Acenaphthene	87
2-Chlorophenol	82	4-Nitrophenol	67
1,4-Dichlorobenzene	86	2,4-Dinitrotoluene	71
N-Nitroso-di-n-propylamine	80	Pentachlorophenol	77
1,2,4-Trichlorobenzene	87	Pyrene	90
4-Chloro-3-methylphenol	79		

Surrogates	% Recovery	Limits
Nitrobenzene-D5	70	23 - 120
2-Fluorobiphenyl	69	30 - 115
Terphenyl-D14	73	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	67	25 - 121
2,4,6-Tribromophenol	77	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1060-MSD**
 SAMPLE DATE: **10/26/93**
 SAMPLE MATRIX: **SOIL**
 DILUTION FACTOR (6010): **97.0873**
 UNITS: **% REC**

	Result	Method Reference	Analysis Date
Arsenic	91	7060	11/16/93
Aluminum	500#	6010	11/13/93
Barium	49#	6010	11/13/93
Beryllium	87	6010	11/13/93
Cadmium	91	6010	11/13/93
Chromium	91	6010	11/13/93
Copper	112	6010	11/13/93
Iron	295	6010	11/13/93
Nickel	90	6010	11/13/93
Lead	35	7421	11/15/93
Mercury	102	7471	11/15/93
Silver	89	6010	11/13/93
Zinc	86	6010	11/13/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%),
 while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

#Matrix spike and % RPD for matrix spikes outside control limits due to matrix interference on aluminum and barium analysis by ICPEs. LCS / LCSD results and method Quality Control were acceptable.

% RPD for matrix spikes outside control limits due to matrix interference on copper analysis by ICPEs. LCS / LCSD results and method Quality Control were acceptable.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1061
SAMPLE DATE: 10/26/93 09:15:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.50U	0.50 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1061
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

			Reporting						Reporting		
			Result	Qual	Limit				Result	Qual	Limit
Chloromethane	10	U	10			1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10			trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10			Trichloroethene	5	U	5		
Chloroethane	10	U	10			Chlorodibromomethane	5	U	5		
Methylene chloride	1.1	JB	10			1,1,2-Trichloroethane	5	U	5		
Acetone	11	JB	100			Benzene	5	U	5		
Carbon disulfide	5	U	5			cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5			2-Chloroethylvinyl ether	10	U	10		
-Dichloroethane	5	U	5			Bromoform	5	U	5		
trans-1,2-Dichloroethene	5	U	5			2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5			4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5			Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5			1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	100	U	100			Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5			Chlorobenzene	5	U	5		
Carbon tetrachloride	5	U	5			Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10			Styrene	5	U	5		
Dichlorobromomethane	5	U	5			Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	106	81 - 117
BROMOFLUOROBENZENE	103	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1061
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/03/93
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting	Result	Qual	Limit	Reporting	Result	Qual	Limit
Phenol	0.330	U	0.330			2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330			3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330			Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330			2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330			4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330			Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330			2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330			Diethylphthalate	0.330	U	0.330
(2-Chloroisopropyl)ether	0.330	U	0.330			4-Chlorophenyl-phenylether	0.330	U	0.330
4-Methylphenol	0.330	U	0.330			Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330			4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330			4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330			N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330			4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330			Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330			Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330			Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330			Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330			Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330			Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330			Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330			Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330			3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330			Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330			Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330			bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330			Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825			Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330			Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825			Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330			Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330			Dibenzo(a,h)anthracene	0.330	U	0.330
						Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1061
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	76	23 - 120
2-Fluorobiphenyl	74	30 - 115
Terphenyl-D14	83	18 - 137
Phenol-D5	77	24 - 113
2-Fluorophenol	68	25 - 121
2,4,6-Tribromophenol	82	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: Metals
METHOD REFERENCE: EPA6010

SAMPLE ID: A1061
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL
DILUTION FACTOR (6010): 84.0336
UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	3.9		0.84	7060	11/15/93
Aluminum	9700	N	17	6010	11/13/93
Barium	930	N*	17	6010	11/13/93
Beryllium	0.83		0.42	6010	11/13/93
Cadmium	0.70		0.42	6010	11/13/93
Chromium	16		0.84	6010	11/13/93
Copper	9.3	N	2.1	6010	11/13/93
Iron	16000	N	8.4	6010	11/13/93
Nickel	13		3.4	6010	11/13/93
Lead	10	N	1.0	7421	11/15/93
Mercury	0.020	U	0.020	7471	11/15/93
Silver	0.67		0.84	6010	11/13/93
Zinc	18		1.7	6010	11/13/93

Data qualifier key:

E - estimated value
M - duplicate injection precision not met
N - spike recovery not within control limits
S - determined by MSA
W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
* - duplicate analysis outside control limits
+ - Correlation coefficient for the MSA <0.995
B - < CRDL but >= IDL
U - none detected
'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1062
SAMPLE DATE: 10/26/93 14:15:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.10U	0.10 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1062
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

				Reporting			Reporting		
	Result	Qual	Limit				Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10	Trichloroethene	5	U	5		
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5		
Methylene chloride	0.6	JB	10	1,1,2-Trichloroethane	5	U	5		
Acetone	18	JB	100	Benzene	5	U	5		
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10		
-Dichloroethane	5	U	5	Bromoform	5	U	5		
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5	Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	3.4	JB	100	Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5		
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10	Styrene	5	U	5		
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	111	81 - 117
BROMOFLUOROBENZENE	95	74 - 121
1,2-DICHLOROETHANE-D4	110	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1062
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/03/93
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

	Result	Qual	Limit		Result	Qual	Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1062
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	73	23 - 120
2-Fluorobiphenyl	68	30 - 115
Terphenyl-D14	80	18 - 137
Phenol-D5	74	24 - 113
2-Fluorophenol	67	25 - 121
2,4,6-Tribromophenol	77	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1062**
 SAMPLE DATE: **10/26/93**
 SAMPLE MATRIX: **SOIL**
 DILUTION FACTOR (6010): **93.4579**
 UNITS: **MG/KG**

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.5		1.1	7060	11/15/93
Aluminum	10000	N	19	6010	11/13/93
Barium	170	N*	19	6010	11/13/93
Beryllium	0.75		0.47	6010	11/13/93
Cadmium	0.36		0.47	6010	11/13/93
Chromium	9.6		0.93	6010	11/13/93
Copper	7.3	N	2.3	6010	11/13/93
Iron	9600	N	9.3	6010	11/13/93
Nickel	8.4		3.7	6010	11/13/93
Lead	7.0	N	0.32	7421	11/15/93
Mercury	0.023	U	0.023	7471	11/15/93
Silver	0.32		0.93	6010	11/13/93
Zinc	16		1.9	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1063
SAMPLE DATE: 10/26/93 14:20:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.50U	0.50 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1063
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	11	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	5	U	5	Bromoform	5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	107	81 - 117
BROMOFLUOROBENZENE	98	74 - 121
1,2-DICHLOROETHANE-D4	111	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1063
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/03/93
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 0.033
 UNITS: MG/KG

			Reporting					Reportir	
	Result	Qual	Limit		Result	Qual	Limit		
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330		
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825		
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330		
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825		
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825		
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330		
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330		
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330		
1,2-Bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330		
1-Methylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330		
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825		
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825		
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330		
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330		
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330		
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825		
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330		
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330		
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330		
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330		
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330		
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330		
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330		
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330		
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330		
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330		
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U	0.330		
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U	0.330		
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330		
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330		
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330		
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330		
				Benzo(g,h,i)perylene	0.330	U	0.330		

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1063
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	76	23 - 120
2-Fluorobiphenyl	75	30 - 115
Terphenyl-D14	82	18 - 137
Phenol-D5	81	24 - 113
2-Fluorophenol	70	25 - 121
2,4,6-Tribromophenol	77	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1063
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 116.279
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.8		0.98	7060	11/15/93
Aluminum	8600	N	23	6010	11/13/93
Barium	95	N*	23	6010	11/13/93
Beryllium	0.63		0.58	6010	11/13/93
Cadmium	0.49		0.58	6010	11/13/93
Chromium	13		1.2	6010	11/13/93
Copper	6.0	N	2.9	6010	11/13/93
Iron	9700	N	12	6010	11/13/93
Nickel	10		4.7	6010	11/13/93
Lead	5.6	N	0.29	7421	11/15/93
Mercury	0.024	U	0.024	7471	11/15/93
Silver	0.15		1.2	6010	11/13/93
Zinc	15		2.3	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1064
SAMPLE DATE: 10/26/93 14:25:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.50U	0.50 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1064
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

			Reporting					Reportin	
			Result	Qual	Limit				Result Qual Limit
Chloromethane	10	U	10			1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10			trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10			Trichloroethene	5	U	5
Chloroethane	10	U	10			Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10			1,1,2-Trichloroethane	5	U	5
Acetone	9.9	JB	100			Benzene	5	U	5
Carbon disulfide	5	U	5			cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5			2-Chloroethylvinyl ether	10	U	10
1,2-Dichloroethane	5	U	5			Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5			2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5			4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5			Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5			1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	3.9	JB	100			Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5			Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5			Ethylbenzene	5	U	5
Vinyl acetate	10	U	10			Styrene	5	U	5
Dichlorobromomethane	5	U	5			Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	106	81 - 117
BROMOFLUOROBENZENE	101	74 - 121
1,2-DICHLOROETHANE-D4	113	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1064
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/03/93
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting		Reporting
	Result	Qual	Limit	Result Qual Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene 0.330 U 0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline 0.825 U 0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene 0.330 U 0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol 0.825 U 0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol 0.825 U 0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran 0.330 U 0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene 0.330 U 0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate 0.330 U 0.330
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether 0.330 U 0.330
4-Methylphenol	0.330	U	0.330	Fluorene 0.330 U 0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline 0.825 U 0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol 0.825 U 0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1) 0.330 U 0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether 0.330 U 0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene 0.330 U 0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol 0.825 U 0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene 0.330 U 0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene 0.330 U 0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate 0.330 U 0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene 0.330 U 0.330
Naphthalene	0.330	U	0.330	Pyrene 0.330 U 0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate 0.330 U 0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine 0.330 U 0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene 0.330 U 0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene 0.330 U 0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate 0.330 U 0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate 0.330 U 0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene 0.330 U 0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene 0.330 U 0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene 0.330 U 0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene 0.330 U 0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene 0.330 U 0.330
				Benzo(g,h,i)perylene 0.330 U 0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1064
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	66	23 - 120
2-Fluorobiphenyl	70	30 - 115
Terphenyl-D14	77	18 - 137
Phenol-D5	79	24 - 113
2-Fluorophenol	66	25 - 121
2,4,6-Tribromophenol	80	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1064
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 92.5925
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.7		1.2	7060	11/15/93
Aluminum	8900	N	19	6010	11/13/93
Barium	170	N*	19	6010	11/13/93
Beryllium	0.65		0.46	6010	11/13/93
Cadmium	0.91		0.46	6010	11/13/93
Chromium	13		0.93	6010	11/13/93
Copper	6.5	N	2.3	6010	11/13/93
Iron	11000	N	9.3	6010	11/13/93
Nickel	15		3.7	6010	11/13/93
Lead	3.7	N	0.35	7421	11/15/93
Mercury	0.024	U	0.024	7471	11/15/93
Silver	0.22		0.93	6010	11/13/93
Zinc	17		1.9	6010	11/13/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1065
SAMPLE DATE: 10/26/93 14:30:00
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.50U	0.50	MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1065
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	9.0	JB	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	3.6	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	106	81 - 117
BROMOFLUOROBENZENE	102	74 - 121
1,2-DICHLOROETHANE-D4	114	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1065
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/03/93
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 0.033

UNITS: MG/KG

Reporting			Reporting		
	Result	Qual Limit		Result	Qual Limit
Phenol	0.330	U 0.330	2,6-Dinitrotoluene	0.330	U 0.330
bis(2-Chloroethyl)ether	0.330	U 0.330	3-Nitroaniline	0.825	U 0.825
2-Chlorophenol	0.330	U 0.330	Acenaphthene	0.330	U 0.330
1,3-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrophenol	0.825	U 0.825
1,4-Dichlorobenzene	0.330	U 0.330	4-Nitrophenol	0.825	U 0.825
Benzyl alcohol	0.330	U 0.330	Dibenzofuran	0.330	U 0.330
1,2-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrotoluene	0.330	U 0.330
2-Methylphenol	0.330	U 0.330	Diethylphthalate	0.330	U 0.330
(2-Chloroisopropyl)ether	0.330	U 0.330	4-Chlorophenyl-phenylether	0.330	U 0.330
2-Methylphenol	0.330	U 0.330	Fluorene	0.330	U 0.330
N-Nitroso-di-n-propylamine	0.330	U 0.330	4-Nitroaniline	0.825	U 0.825
Hexachloroethane	0.330	U 0.330	4,6-Dinitro-2-methylphenol	0.825	U 0.825
Nitrobenzene	0.330	U 0.330	N-Nitrosodiphenylamine (1)	0.330	U 0.330
Isophorone	0.330	U 0.330	4-Bromophenyl-phenylether	0.330	U 0.330
2-Nitrophenol	0.330	U 0.330	Hexachlorobenzene	0.330	U 0.330
2,4-Dimethylphenol	0.330	U 0.330	Pentachlorophenol	0.825	U 0.825
Benzoic Acid	0.330	U 0.330	Phenanthrene	0.330	U 0.330
bis(2-Chloroethoxy)methane	0.330	U 0.330	Anthracene	0.330	U 0.330
2,4-Dichlorophenol	0.330	U 0.330	Di-n-butylphthalate	0.330	U 0.330
1,2,4-Trichlorobenzene	0.330	U 0.330	Fluoranthene	0.330	U 0.330
Naphthalene	0.330	U 0.330	Pyrene	0.330	U 0.330
4-Chloroaniline	0.330	U 0.330	Butylbenzylphthalate	0.330	U 0.330
Hexachlorobutadiene	0.330	U 0.330	3,3'-Dichlorobenzidine	0.330	U 0.330
4-Chloro-3-methylphenol	0.330	U 0.330	Benzo(a)anthracene	0.330	U 0.330
2-Methylnaphthalene	0.330	U 0.330	Chrysene	0.330	U 0.330
Hexachlorocyclopentadiene	0.330	U 0.330	bis(2-Ethylhexyl)phthalate	0.330	U 0.330
2,4,6-Trichlorophenol	0.330	U 0.330	Di-n-octylphthalate	0.330	U 0.330
2,4,5-Trichlorophenol	0.825	U 0.825	Benzo(b)fluoranthene	0.330	U 0.330
2-Chloronaphthalene	0.330	U 0.330	Benzo(k)fluoranthene	0.330	U 0.330
2-Nitroaniline	0.825	U 0.825	Benzo(a)pyrene	0.330	U 0.330
Dimethylphthalate	0.330	U 0.330	Indeno(1,2,3-cd)pyrene	0.330	U 0.330
Acenaphthylene	0.330	U 0.330	Dibenzo(a,h)anthracene	0.330	U 0.330
			Benzo(g,h,i)perylene	0.330	U 0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1065
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	69	23 - 120
2-Fluorobiphenyl	68	30 - 115
Terphenyl-D14	72	18 - 137
Phenol-D5	72	24 - 113
2-Fluorophenol	62	25 - 121
2,4,6-Tribromophenol	77	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: **Metals**
 METHOD REFERENCE: **EPA6010**

SAMPLE ID: **A1065**
 SAMPLE DATE: **10/26/93**
 SAMPLE MATRIX: **SOIL**
 DILUTION FACTOR (6010): **104.166**
 UNITS: **MG/KG**

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.3		0.95	7060	11/15/93
Aluminum	8100	N	21	6010	11/13/93
Barium	160	N*	21	6010	11/13/93
Beryllium	0.69		0.52	6010	11/13/93
Cadmium	1.1		0.52	6010	11/13/93
Chromium	13		1.0	6010	11/13/93
Copper	8.3	N	2.6	6010	11/13/93
Iron	14000	N	10	6010	11/13/93
Nickel	15		4.2	6010	11/13/93
Lead	4.7	N	0.29	7421	11/15/93
Mercury	0.024	U	0.024	7471	11/15/93
Silver	0.047		1.0	6010	11/13/93
Zinc	18		2.1	6010	11/13/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1056
 SAMPLE DATE: 10/21/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 11/01/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

			Reporting						Reporting		
			Result	Qual	Limit				Result	Qual	Limit
Chloromethane	10	U	10			1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10			trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10			Trichloroethene	5	U	5		
Chloroethane	10	U	10			Chlorodibromomethane	5	U	5		
Methylene chloride	10	U	10			1,1,2-Trichloroethane	5	U	5		
Acetone	100	U	100			Benzene	5	U	5		
Carbon disulfide	5	U	5			cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5			2-Chloroethylvinyl ether	10	U	10		
1,2-Dichloroethane	5	U	5			Bromoform	5	U	5		
trans-1,2-Dichloroethene	5	U	5			2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5			4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5			Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5			1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	2.0	U	100			Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5			Chlorobenzene	5	U	5		
Carbon tetrachloride	5	U	5			Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10			Styrene	5	U	5		
Dichlorobromomethane	5	U	5			Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	94	88 - 110
BROMOFLUOROBENZENE	105	86 - 115
1,2-DICHLOROETHANE-D4	95	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-382

409832-003-01

SAMPLE ID: A1057
SAMPLE DATE: 10/26/93 08:45:00
SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u>	<u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.010U	0.010	MG/L	10/27/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: A1057
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 11/01/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	102	86 - 115
1,2-DICHLOROETHANE-D4	100	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: A1057
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: WATER
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0

UNITS:	UG/L	Reporting				Reporti		
		Result	Qual	Limit		Result	Qual	Limit
Phenol	10	U	10	2,6-Dinitrotoluene	10	U	10	
bis(2-Chloroethyl)ether	10	U	10	3-Nitroaniline	25	U	25	
2-Chlorophenol	10	U	10	Acenaphthene	10	U	10	
1,3-Dichlorobenzene	10	U	10	2,4-Dinitrophenol	25	U	25	
1,4-Dichlorobenzene	10	U	10	4-Nitrophenol	25	U	25	
Benzyl alcohol	10	U	10	Dibenzofuran	10	U	10	
1,2-Dichlorobenzene	10	U	10	2,4-Dinitrotoluene	10	U	10	
2-Methylphenol	10	U	10	Diethylphthalate	10	U	10	
3(2-Chloroisopropyl)ether	10	U	10	4-Chlorophenyl-phenylether	10	U	10	
Methylphenol	10	U	10	Fluorene	10	U	10	
N-Nitroso-di-n-propylamine	10	U	10	4-Nitroaniline	10	U	10	
Hexachloroethane	10	U	10	4,6-Dinitro-2-methylphenol	25	U	25	
Nitrobenzene	10	U	10	N-Nitrosodiphenylamine (1)	10	U	10	
Isophorone	10	U	10	4-Bromophenyl-phenylether	10	U	10	
2-Nitrophenol	10	U	10	Hexachlorobenzene	10	U	10	
2,4-Dimethylphenol	10	U	10	Pentachlorophenol	25	U	25	
Benzoic Acid	10	U	10	Phenanthrene	10	U	10	
bis(2-Chloroethoxy)methane	10	U	10	Anthracene	10	U	10	
2,4-Dichlorophenol	10	U	10	Di-n-butylphthalate	10	U	10	
1,2,4-Trichlorobenzene	10	U	10	Fluoranthene	10	U	10	
Naphthalene	10	U	10	Pyrene	10	U	10	
4-Chloroaniline	10	U	10	Butylbenzylphthalate	10	U	10	
Hexachlorobutadiene	10	U	10	3,3'-Dichlorobenzidine	10	U	10	
4-Chloro-3-methylphenol	10	U	10	Benzo(a)anthracene	10	U	10	
2-Methylnaphthalene	10	U	10	Chrysene	10	U	10	
Hexachlorocyclopentadiene	10	U	10	bis(2-Ethylhexyl)phthalate	10	U	10	
2,4,6-Trichlorophenol	10	U	10	Di-n-octylphthalate	10	U	10	
2,4,5-Trichlorophenol	10	U	10	Benzo(b)fluoranthene	10	U	10	
2-Chloronaphthalene	10	U	10	Benzo(k)fluoranthene	10	U	10	
2-Nitroaniline	25	U	25	Benzo(a)pyrene	10	U	10	
Dimethylphthalate	10	U	10	Indeno(1,2,3-cd)pyrene	10	U	10	
Acenaphthylene	10	U	10	Dibenzo(a,h)anthracene	10	U	10	
				Benzo(g,h,i)perylene	10	U	10	

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: A1057
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	65	35 - 114
2-Fluorobiphenyl	70	43 - 116
Terphenyl-D14	94	33 - 141
Phenol-D5	60	10 - 94
2-Fluorophenol	63	21 - 100
2,4,6-Tribromophenol	84	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: A1057
 SAMPLE DATE: 10/26/93
 SAMPLE MATRIX: WATER
 DILUTION FACTOR (6010): 1.00000
 UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.10	U	0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0030	U	0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/16/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.020	U	0.020	6010	11/16/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

SAMPLE ID: LAB BLANK
SAMPLE DATE:
SAMPLE MATRIX: SOIL

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.010U	0.010 MG/KG	11/05/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK
 SAMPLE DATE: not spec
 SAMPLE MATRIX: SOIL
 ANALYSIS DATE: 11/05/93
 DILUTION FACTOR: 1.0
 UNITS: UG/KG

Reporting				Reporting			
Result	Qual	Limit		Result	Qual	Limit	
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	U	10	Trichloroethene	5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	0.5	J	10	1,1,2-Trichloroethane	5	U	5
Acetone	4.2	J	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	3.4	J	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	103	74 - 121
1,2-DICHLOROETHANE-D4	107	70 - 120

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK
 SAMPLE DATE: not spec
 SAMPLE MATRIX: SOIL
 EXTRACTION DATE: 11/03/93
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 0.033

UNITS:	MG/KG	Reporting			Reporting	
		Result	Qual	Limit	Result	Qual
					Limit	
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U 0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U 0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U 0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U 0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U 0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U 0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U 0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U 0.330
;(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U 0.330
2-Methylphenol	0.330	U	0.330	Fluorene	0.330	U 0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U 0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U 0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U 0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U 0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U 0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U 0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U 0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U 0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U 0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U 0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U 0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U 0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U 0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U 0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U 0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U 0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U 0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U 0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U 0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U 0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U 0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U 0.330
				Benzo(g,h,i)perylene	0.330	U 0.330

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	65	23 - 120
2-Fluorobiphenyl	71	30 - 115
Terphenyl-D14	69	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	59	25 - 121
2,4,6-Tribromophenol	68	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK
 SAMPLE DATE: not spec
 SAMPLE MATRIX: SOIL
 DILUTION FACTOR (6010): 1.0
 UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/15/93
Aluminum	0.20	U	0.20	6010	11/13/93
Barium	0.20	U	0.20	6010	11/13/93
Beryllium	0.0050	U	0.0050	6010	11/13/93
Cadmium	0.0050	U	0.0050	6010	11/13/93
Chromium	0.010	U	0.010	6010	11/13/93
Copper	0.025	U	0.025	6010	11/13/93
Iron	0.10	U	0.10	6010	11/13/93
Nickel	0.040	U	0.040	6010	11/13/93
Lead	0.0030	U	0.0030	7421	11/15/93
Mercury	0.00020	U	0.00020	7471	11/15/93
Silver	0.010	U	0.010	6010	11/13/93
Zinc	0.020	U	0.020	6010	11/13/93

Data qualifier key:

E - estimated value
 M - duplicate injection precision not met
 N - spike recovery not within control limits
 S - determined by MSA
 W - post-digestion spike for Furnace AA is out of control limits (85-115%),
 while sample absorbance is <50% of spike absorbance
 * - duplicate analysis outside control limits
 + - Correlation coefficient for the MSA <0.995
 B - < CRDL but >= IDL
 U - none detected
 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

SAMPLE ID: LAB BLANK
SAMPLE DATE:
SAMPLE MATRIX: WATER

<u>Test Name</u>	<u>Note</u> <u>Ref</u>	<u>Result</u>	<u>Reporting</u> <u>Limit</u> <u>Units</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u> <u>Reference</u>
Chromium VI		0.010U	0.010 MG/L	10/27/93	EPA7196

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.
 METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK
 SAMPLE DATE: not spec
 SAMPLE MATRIX: WATER
 ANALYSIS DATE: 11/01/93
 DILUTION FACTOR: 1.0
 UNITS: UG/L

				Reporting			Reporting		
				Result	Qual	Limit	Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5		
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5		
Vinyl chloride	10	U	10	Trichloroethene	5	U	5		
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5		
Methylene chloride	4.2	J	10	1,1,2-Trichloroethane	5	U	5		
Acetone	100	U	100	Benzene	5	U	5		
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5		
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10		
1,2-Dichloroethane	5	U	5	Bromoform	5	U	5		
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50		
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U	50		
Chloroform	5	U	5	Tetrachloroethene	5	U	5		
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	U	5		
2-Butanone	4.1	J	100	Toluene	5	U	5		
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5		
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5		
Vinyl acetate	10	U	10	Styrene	5	U	5		
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5		

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	101	86 - 115
1,2-DICHLOROETHANE-D4	105	76 - 114

Data Qualifier Key:

- U - none detected
- J - estimated value (less than the sample quantitation limit)
- B - analyte is found in the associated blank as well as in the sample
- 'blank' - positive result
- * - Surrogate recovery is outside QC limit
- D - compound identified at a secondary dilution factor
- E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 Work Order: B3-10-382

409832-003-01

TEST NAME: ABW HSL GC/MS Extractables
 METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK
 SAMPLE DATE: not spec
 SAMPLE MATRIX: WATER
 EXTRACTION DATE: 11/01/93
 ANALYSIS DATE: 11/06/93
 DILUTION FACTOR: 1.0

	UNITS:	UG/L	Reporting				UNITS:	UG/L	Reporting		
			Result	Qual	Limit				Result	Qual	Limit
Phenol			10	U	10	2,6-Dinitrotoluene			10	U	10
bis(2-Chloroethyl)ether			10	U	10	3-Nitroaniline			25	U	25
2-Chlorophenol			10	U	10	Acenaphthene			10	U	10
1,3-Dichlorobenzene			10	U	10	2,4-Dinitrophenol			25	U	25
1,4-Dichlorobenzene			10	U	10	4-Nitrophenol			25	U	25
Benzyl alcohol			10	U	10	Dibenzofuran			10	U	10
1,2-Dichlorobenzene			10	U	10	2,4-Dinitrotoluene			10	U	10
2-Methylphenol			10	U	10	Diethylphthalate			10	U	10
(2-Chloroisopropyl)ether			10	U	10	4-Chlorophenyl-phenylether			10	U	10
4-Methylphenol			10	U	10	Fluorene			10	U	10
N-Nitroso-di-n-propylamine			10	U	10	4-Nitroaniline			10	U	10
Hexachloroethane			10	U	10	4,6-Dinitro-2-methylphenol			25	U	25
Nitrobenzene			10	U	10	N-Nitrosodiphenylamine (1)			10	U	10
Isophorone			10	U	10	4-Bromophenyl-phenylether			10	U	10
2-Nitrophenol			10	U	10	Hexachlorobenzene			10	U	10
2,4-Dimethylphenol			10	U	10	Pentachlorophenol			25	U	25
Benzoic Acid			10	U	10	Phenanthrene			10	U	10
bis(2-Chloroethoxy)methane			10	U	10	Anthracene			10	U	10
2,4-Dichlorophenol			10	U	10	Di-n-butylphthalate			10	U	10
1,2,4-Trichlorobenzene			10	U	10	Fluoranthene			10	U	10
Naphthalene			10	U	10	Pyrene			10	U	10
4-Chloroaniline			10	U	10	Butylbenzylphthalate			10	U	10
Hexachlorobutadiene			10	U	10	3,3'-Dichlorobenzidine			10	U	10
4-Chloro-3-methylphenol			10	U	10	Benzo(a)anthracene			10	U	10
2-Methylnaphthalene			10	U	10	Chrysene			10	U	10
Hexachlorocyclopentadiene			10	U	10	bis(2-Ethylhexyl)phthalate			10	U	10
2,4,6-Trichlorophenol			10	U	10	Di-n-octylphthalate			10	U	10
2,4,5-Trichlorophenol			10	U	10	Benzo(b)fluoranthene			10	U	10
2-Chloronaphthalene			10	U	10	Benzo(k)fluoranthene			10	U	10
2-Nitroaniline			25	U	25	Benzo(a)pyrene			10	U	10
Dimethylphthalate			10	U	10	Indeno(1,2,3-cd)pyrene			10	U	10
Acenaphthylene			10	U	10	Dibenzo(a,h)anthracene			10	U	10
						Benzo(g,h,i)perylene			10	U	10

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME: ABW HSL GC/MS Extractables
METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	67	35 - 114
2-Fluorobiphenyl	72	43 - 116
Terphenyl-D14	92	33 - 141
Phenol-D5	61	10 - 94
2-Fluorophenol	67	21 - 100
2,4,6-Tribromophenol	81	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected
J - estimated value (less than the sample quantitation limit)
B - analyte is found in the associated blank as well as in the sample
'blank' - positive result
* - Surrogate recovery is outside QC limit
D - compound identified at a secondary dilution factor
E - concentration exceeds calibration range

Company: IT CORPORATION
 Date: 12/07/93
 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
 AUSTIN, TX
 (512) 892-6684
 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals
 METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK
 SAMPLE DATE: not spec
 SAMPLE MATRIX: WATER
 DILUTION FACTOR (6010): 1.0
 UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.10	U	0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0030	U	0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/15/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.020	U	0.020	6010	11/16/93

Data qualifier key:

- E - estimated value
- M - duplicate injection precision not met
- N - spike recovery not within control limits
- S - determined by MSA
- W - post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * - duplicate analysis outside control limits
- + - Correlation coefficient for the MSA <0.995
- B - < CRDL but >= IDL
- U - none detected
- 'blank' - positive result

NOTE: Dilution Factor applies to Method 6010 only.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME ICP Metals

TEST CODE 6010

Metals by ICP

Inductively coupled emission spectroscopy according to Method 6010, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols.

TEST CODE 8240TK

Hazardous Substance
List Volatiles

Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables

TEST CODE 8270TK

Hazardous Substance
List Extractables

Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction followed by GC/MS analysis.

TEST NAME Arsenic - Graphite Furnace

TEST CODE AS_GF

Arsenic
Graphite
Furnace

Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes, EPA-600/4-82-055, December 1982.

TEST NAME Chromium VI

TEST CODE CR_VI

Chromium VI

Method 7196, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Colorimetric analysis. Equivalent to Standard Methods 3500-Cr D.

TEST NAME Mercury

TEST CODE HG_AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption. Method 7470 is used for water.

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
409832-003-01 Work Order: B3-10-382

TEST NAME Mercury

TEST CODE HG_AA

Method 245.5-"Technical Additions to Methods for
Chemical Analysis of Water and Wastes,"
EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK2

Method not available.

TEST NAME Lead - Graphite Furnace

TEST CODE PB_GF

Lead

Graphite
Furnace

EPA 7421, SW-846, Test Methods for Evaluating Solid
Wastes, Third Edition.
EPA 239.2-Technical Additions to Methods for Chemical
Analysis of Water and Wastes," EPA-600/4-82-055,
December 1982.

TEST NAME ICPES Digestion - Water

TEST CODE Z3005

Water Digestion

Method 3005A, SW-846, Test Methods for Evaluating Solid
Wastes, Third Edition. Digestion procedure for the
preparation of surface and ground water samples for
analysis by flame atomic absorption spectroscopy and
inductively coupled plasma spectroscopy. The procedure
determines total recoverable or dissolved metals.

TEST NAME GFAA Digestion - Water

TEST CODE Z3020

Water Digestion

Method 3020, SW-846, Test Methods for Evaluating Solid
Wastes, Third Edition. Acid digestion technique for
Graphite Furnace.

TEST NAME GFAA Digestion - Soil

TEST CODE Z3050F

Company: IT CORPORATION
Date: 12/07/93
Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX
(512) 892-6684
Work Order: B3-10-382

409832-003-01

TEST NAME GFAA Digestion - Soil

TEST CODE Z3050F

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for Graphite Furnace/Flame AA analysis.

TEST NAME ICPES Digestion - Soil

TEST CODE Z3050P

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for ICPES analysis. Equivalent to Method 3050A, SW-846 Update I, July 1992.



INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document Number: 313511
Page 1 of 2

Project Name/No. 1 THAFB-5001 Samples Shipment Date 7 10-26-93 Bill to: 5 409832 03-01
Sample Team Members 2 Andrew Gordon Lab Destination 8 ITAS-Austin D.O. - 5001
Profit Center No. 3 3527 Lab Contact 9 Karmen Deavie
Project Manager 4 Jimmy Taylor Project Contact/Phone 12 Don McGregor
Purchase Order No. 6 409832.03 Carrier/Waybill No. 13 FX 8460756371
Report to: 10 Tim Jennings
IT-Austin-ES

Required Report Date 11 15 Days

ONE CONTAINER PER LINE

Sample Number	Sample Description/Type	Date/Time Collected	Container Type	Sample Volume	Pre-19 preservative	Requested Testing Program	Condition on Receipt	Disposal Record No.
A1056	Trip Blank	10-26-93 1700	clear glass	40ml	HCL	8240	Good 1°C	83244100.1
A1057	Rinse Blank	10-26-93 0845	Amber glass	40ml	HCL	8240	Good 1°C	83244100.1
A1057		10-26-93 0845	poly	1L	COOL	8270		
A1057		10-26-93 0845	poly	250ml	HNO3	6010/7000		
A1057		10-26-93 0845	poly	"	COOL	Hex Chrome		
A1058	Soil	10-26-93 0850	clear glass	175ml		8240		
A1058	Soil	10-26-93 0850	glass	500ml		8270, 600/7000		

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required: 26
Normal ☒ Rush ☐

QC Level: 27
I ☒ II ☐ III ☐

Project Specific (specify):

1. Relinquished by 28 (Signature/Affiliation) [Signature] Date: 10-26-93 Time: 1800
1. Received by 28 (Signature/Affiliation) Doni Chish Date: 10-27-93 Time: 0901

2. Relinquished by (Signature/Affiliation) _____ Date: _____ Time: _____
2. Received by (Signature/Affiliation) _____ Date: _____ Time: _____

3. Relinquished by (Signature/Affiliation) _____ Date: _____ Time: _____
3. Received by (Signature/Affiliation) _____ Date: _____ Time: _____

Comments: 29



ANALYSIS REEST AND CHAIN OF CUSTODY RECORD (cont.)^{1*}

Project Name: JAFB-5001

Project No. 409837.03-01

Samples Shipment Date 10-26-93

B3 10382

Reference Document No. 3

Page 2 of 2

13571

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions

Sample Number	Sample Description/Type	Date/Time Collected	Container Type	Sample Volume	Pre-19 servative	Requested Testing Program	Condition on Receipt	Disposal Record No.
A1059	Soil	10-26-93 0900	Clear glass	125ml	COOL	8240	Good	
A1059		10-26-93 0900		500ml		8270, 600/700		
A1060		10-26-93 0900		125ml		8240		
A1060		10-26-93 0900		500ml		8270, 600/700		
A1061		10-26-93 0915		125ml		8240		
A1061		10-26-93 0915		500ml		8270, 600/700		
A1062		10-26-93 1415		125ml		8240		
A1062		10-26-93 1415		500ml		8270, 600/700		
A1063		10-26-93 1420		125ml		8240		
A1063		10-26-93 1420		500ml		8270, 600/700		
A1064		10-26-93 1425		125ml		8240		
A1064		10-26-93 1425		500ml		8270, 600/700		
A1065		10-26-93 1430		125ml		8240		
A1065		10-26-93 1430		500ml		8270, 600/700		

Auxiliary Data Summary

12/03/93

Work order : B310382

Sample ID : A1058

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
01B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/15/93	90.9
	Chromium VI	B310382-13B	1105CR_VI2	11/05/93	11/05/93	10.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	119
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	364

Auxiliary Data Summary

12/03/93

Work order : B310382

Sample ID : A1059

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	104
	Chromium VI	B310382-13B	1105CR_VI2	11/05/93	11/05/93	50.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	133
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	104

Auxiliary Data Summary

12/03/93

Work order : B310382

Sample ID : A1060

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	108
	Chromium VI	B310382-13B	1105CR_VI2	11/05/93	11/05/93	50.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	103
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	108

Auxiliary Data Summary

12/03/93

Work order : B310382

Sample ID : A1060-MS

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	116
	Chromium VI	B310382-13B	1105CR_VI2	11/05/93	11/05/93	50.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	128
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	116

Auxiliary Data Summary

12/03/93

Work order : B310382

Sample ID : A1060-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
05B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	84.7
	Chromium VI	B310382-13B	1105CR_VI2	11/05/93	11/05/93	50.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	118
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	339

Auxiliary Data Summary

12/03/93

Work order : B310382

Sample ID : A1061

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
06B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	84
	Chromium VI	B310382-13B	1105CR_VI2	11/05/93	11/05/93	50.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	102
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	336

Auxiliary Data Summary

12/03/93

Work order : B310382

Sample ID : A1062

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
07B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	108
	Chromium VI	B310382-13B	1105CR_VI2	11/05/93	11/05/93	10.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	116
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	108

Auxiliary Data Summary

12/03/93

Work order : B310382

Sample ID : A1063

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
08B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	98
	Chromium VI	B310382-13B	1105CR_VI2	11/05/93	11/05/93	50.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	120
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	98

Auxiliary Data Summary

12/03/93

Work order : B310382

Sample ID : A1064

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
09B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	116
	Chromium VI	B310382-13B	1105CR_VI2	11/05/93	11/05/93	50.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	118
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	116

Auxiliary Data Summary

12/03/93

Work order : B310382

Sample ID : A1065

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
10B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	95.2
	Chromium VI	B310382-13B	1105CR_VI2	11/05/93	11/05/93	50.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	120
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	95.2

Auxiliary Data Summary

12/03/93

Work order : B310382

Sample ID : A1057

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
12C						
	Arsenic	B310382-14A	111030201	11/10/93	11/12/93	1.0
	Mercury	B310382-14A	1116HGAA2	11/16/93	11/16/93	1.0
	Lead	B310382-14A	111030201	11/10/93	11/11/93	1.0
12D	Chromium VI	B310382-14A	1027CR_VI1	10/27/93	10/27/93	1.0

Auxiliary Data Summary

12/03/93

Work order : B310382

Sample ID : LAB BLANK

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
13B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	1.0
	Chromium VI	B310382-13B	1105CR_VI2	11/05/93	11/05/93	1.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	1.0
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	1.0

Auxiliary Data Summary

12/03/93

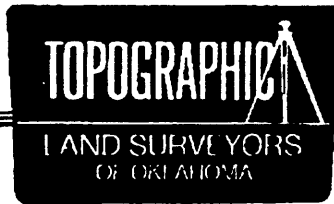
Work order : B310382

Sample ID : LAB BLANK

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
14A						
	Arsenic	B310382-13B	111030201	11/10/93	11/12/93	1.0
	Chromium VI	B310382-14A	1027CR_VI1	10/27/93	10/27/93	1.0
	Mercury	B310382-13B	1116HGAA2	11/16/93	11/15/93	1.0
	Lead	B310382-13B	111030201	11/10/93	11/11/93	1.0

APPENDIX D
SITE SURVEY REPORT

Phone: (405) 843-4847
WATS: (800) 854-3219
FAX: (405) 843-0975



Surveying and Mapping for Oklahoma's Energy Industry

6709 N. Classen Blvd.

Oklahoma City, Oklahoma 73116

International Technology Corporation
Attn.: Joe Pacelli
312 Directors Drive
Knoxville, Tn 37923
Reference: IT Subcontract No. 547295
IDO-5001
Bid 93116

(Survey Contract)
4.4 Documentation of Surveying Activities

Survey Contractor:

Topographic Land Surveyors of Oklahoma
6709 N. Classen Blvd.
Oklahoma City, Oklahoma 73116
Edward D. (Deral) Paulk, PLS
President
Harry McClintick, PLS
Party Chief
(405) 843-4847

Instrumentation:

Work done was completed with a Topcon/Sokkisha Model C3E. Last calibration by the factory was done 10/10/1993 and was checked daily by standard survey methods to determine that the tolerance was within factory limits. The unique serial number for the instrument is # 153047. The data collector was a Hewlett-Packard 48SX using the TDS Survey card.

Methods:

Standard mil-spec survey methods were employed during the survey and included.
Double sets of repetitive angles, both in horizontal and vertical.
Distance in Meters and Feet for double redundancy.

Control Points:

All control points used were set by the Corps of Engineers and the coordinates were supplied to us in NAD-83 Meters, Oklahoma North Zone (3501) based upon the Lambert projection. Typical numbers were;

BM SE (secondary control points)

BM PR (Primary control points)

These points were established by Trimble 4000SE GPS receivers and are capable of obtaining accuracy in the centimeter range. During our survey we confirmed this accuracy and due to the nature of GPS usage, we did not balance our traverse of the monumentation. See explanation beginning on page three, this document.

Tabulation of Vertical and Horizontal Coordinates:

In sheet form broken into per site information in three formats.

NAD-83 Meters

NAD-27 Feet

NAD-83 Feet

Field Notes, Calculations and Reduction Techniques:

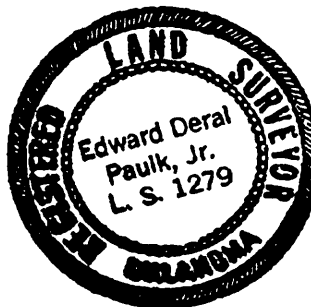
All field work was performed using Total Station and no reduction was necessary. Grid and Sea level factors used in the calculations are attached as part of this report. No paper field notes were kept, except diagrams explaining shot points. These are included as drawings and are part of the digital information supplied.

Actual closure of each particular site is disclosed within this document beginning on page 4.

This survey is true and accurate based upon monumentation supplied by Tinker Air Force Base.



Edward D. Paulk, PLS #1279
Topographic Land Surveyors of Oklahoma
6709 N. Classen Blvd.
Oklahoma City, Oklahoma 73116



USAGE OF GPS MONUMENTATION

Qualifications:

We are a Trimble Navigation dealer for the Midwest and have had crews surveying using GPS for over two years. Edward D. Paulk, has attended training and seminars continually to maintain a level of experience and technical knowledge of GPS that exceeds specs of GPS surveys.

During the course of our preliminary survey, we had closures that exceeded specs and we were forced to continue surveys back to our point of beginning to check our accuracy. We continually proved our surveys by closures exceeding 1 in 10,000, but we could not achieve this using the provided GPS monumentation and closing on a third monument.

We contacted the base mapping department and learned that the monuments were set using 4000SE receivers (GPS) by the Corps of Engineers. The 4000SE is capable of accuracy on any point of +/- 1-3 Centimeters. After this determination, we were well within specs of their given coordinates.

Their survey closure was probably quite good given the distances that they monumented, however when you use relatively close monuments as our survey dictated and very few traverse points, the error looks poor. Had we shot a mile away, then back to add some footage to our survey, the closure would have been much better. Since this technique is only used to comply with a pure mathematical closure, not a better survey, and would not actually improve positional accuracy, we did not do this.

Site by Site Report

File HM-A

HCL Tank

4 Soil Borings

IT Drawing #409832 Fig. 5.5

Horizontal and Vertical Control was establish for (4) four Soil Borings.
BM SE-33, SE-05 and PR-07 were used for control.

Upon first completion of traverse, we closed on PR-07 with 3.041' of error, but our vertical was with 0.05'. We made a closure back to SE-05 and closed within 0.4'. This site had the only apparent large discrepancy in their control. Since SE-33 and SE-05 agreed within limits we used these to determine closure.

Horizontal Accuracy 1 in 10,000

Vertical Accuracy 1 in 95,800

File HM-B

SPILL POND

2 Soil Borings

IT Drawing #409832 Fig. 5.6

Horizontal and Vertical Control was establish for (2) Soil Borings.
BM SE-33, SE-37 and SE-42 were used for control.

Horizontal Accuracy 1 in 5902

Vertical Accuracy 1 in 12,000

We closed back upon our first monument horizontally 1 in 25,000 as a check.

File HM-C

Sludge Drying Beds and Old Pesticide Area

13 Soil Borings

6 Monitor Wells

7 SG Points

IT Drawing # 409832 Fig. 5.3 and 5.7

Horizontal and Vertical Control was established for (13) Soil Borings, (6) Six Monitor wells and (7) SG Points.

BM SE-41, SE-45 and SE-47 were used for control.

Horizontal Accuracy 1 in 8725

Vertical Accuracy 1 in 390,000

We closed back upon BM SE-45 as a check and closed 1 in 14,000 Horizontally.

File HM-D**Fuel Truck***(8) Soil Borings**(3) Monitor Wells**(3) SG Points*

IT Drawing #409832 Fig. 5.4

Horizontal and Vertical Control was established for (8) Soil Borings, (3) Monitor wells and (3) SG Points.

BM PR-02, SE-16 and PR-03 were used for control.

Horizontal Accuracy 1 in 22,586

Vertical Accuracy 1 in 20,000

File HM-E**Ordinance Disposal Area***(5) Soil Borings**(4) Corners of area as per staked and Dan McGregor's instructions.*

IT Drawing #409832 Fig. 5.1

Horizontal and Vertical Control was established for (5) Soil Borings, (4) Corners of area.

BM SE-19, PR-02 and SE-016 were used for control.

Horizontal Accuracy 1 in 10,000

Vertical Accuracy 1 in 20,000

File HM-F**Fire Training Area 2***(8) Monitor Wells*

IT Drawing #409832 Fig. 5.8

Horizontal and Vertical Control was established for (8) Monitor Wells.

BM SE-37, SE-33 and BM32 were used for control.

Horizontal Accuracy 1 in 34,800

Vertical Accuracy 1 in 95,000

File HM-G**AFFF Fire Control Pond***(4) Soil Borings*

IT Drawing #409832 Fig. 5.2

Horizontal and Vertical Control was established for (4) Soil Borings.

BM SE-31, SE-22 and PR-01 were used for control.

Horizontal Accuracy 1 in 6500

Vertical Accuracy 1 in 58,000

Shots Typical

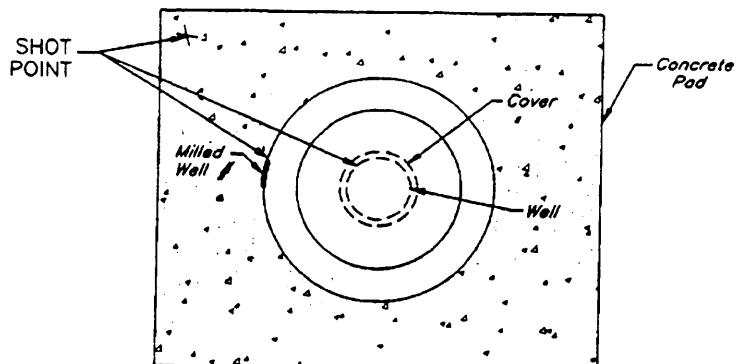
- Soil Borings-** One X,Y,Z placed center of drill hole, typically on top of concrete fill-in area.
(36) Total Soil Borings
- Monitor Well-** (*Flush mount*) Three X,Y,Z,s were placed upon each well.
1: NW Corner of concrete pad.
2: Top of retaining casing, where well number was stamped into a milled area.
3: Top of well, under seal, (X,Y determined for center, and Z determined at north lip of well.
- (*Tower Mount*) Three X,Y,Z,s were placed upon each well.
1: NW Corner of concrete pad.
2: Top of square guard, center
3: Screw cap removed, X and Y in Center and Z on the North lip of well.
(17) Total Monitoring wells. 51 points.

In addition; we determined X,Y and Z for a number of SG points. These were determined at center of dig point.

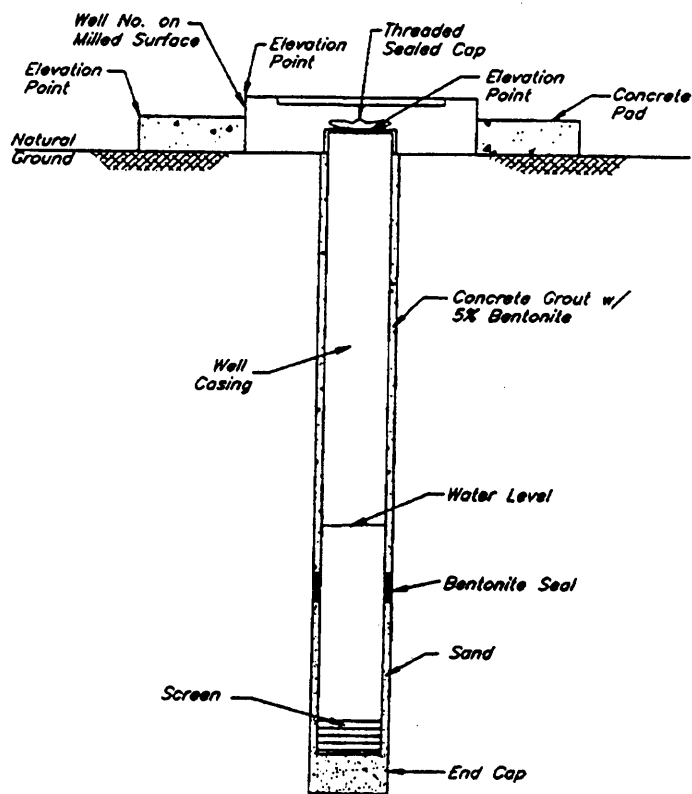
In addition; we determined X,Y and Z for four corners of an area in the **Ordinance Disposal** area as per Dan McGregor's instructions. These points were stakes set by previous contractor.

Included in this report are two drawings showing typical well layouts.

Drawing **Flush.Dwg**
 Tower.Dwg



TOP VIEW



SIDE VIEW

				TYPICAL FLUSH MOUNT MONITORING WELLS		DATE: 1-18-94
NO.	REVISION	DATE	BY			DRAWING: FLUSH.DWG
				TOPOGRAPHIC LAND SURVEYORS OKLAHOMA CITY, OKLAHOMA		SHEET OF

Tinker AFB		Factors	
		Factors.txt	
Calculations for Grid Distance			
Formula Used	$1 - (1250) / (20,906,000)$	0.9999402086	Elevation Factor
Elevation average is 1250			
Grid Factor from USGS Tables			
Average Latitude is 35-25		1.0000306000	Grid Factor
Combination Factor is multiple of these		0.9999708067	Combo Factor

Diskette Files

Disk Labeled *IDO-5001*

#547295

Text Files and Final Reports

FILE NAME**DESCRIPTION**

Report.WPS	Microsoft Works file of final report
Report.TXT	ASCII file of final report.
Finals.WB1	Quattro Pro for Windows data base All areas, control and Factors NAD-83, NAD-27
Finals.WK3	1-2-3 V.3.x database All areas, control and Factors
Hcl.TXT	ASCII of HCL Area
Spill.TXT	ASCII of Spill Pond
Sludge.TXT	ASCII of Sludge and Pesticide
Fuel.TXT	ASCII of Fuel Truck
Ordance.TXT	ASCII of Ordnance area
Fire.TXT	ASCII of Fire Training
FireC.TXT	ASCII of Fire Control
NAD83.TXT	ASCII of X,Y,Z and Description
NAD27.TXT	ASCII of X,Y,Z and Description
Control.TXT	ASCII of X,Y,Z and Description of control monuments.
Factor.TXT	ASCII of grid/elevation factors used in calculations.

Nad 83 Datum		Format given was in meters		Conversion used was		Nad 1927	
State Plane Lambert Coordinate System		Meters X 3.280833337					
Oklahoma North Zone							
Values in Feet							
Control Coordinates from GPS		Meters		Feet			
GPS		Northing		Easting		Northing	
Marker							
Fire Training Center							
SE24		45950.816	655952.830	2153271.945		150730.584	2183669.404
SE28		45804.788	655331.584	2150388.974		148586.353	2182287.332
SE32		45431.989	655045.990	2146006.721		149028.355	2180894.179
SE43		48303.717	654817.311	2143346.403		151868.415	2179843.944
Bldg 1038 Soil Pond							
SE37		45788.902	654825.746	2143717.970		150199.400	2179315.440
SE42		48286.627	654526.676	2147392.936		151865.183	2178980.423
Bldg 970 ARFF							
SE22		44881.607	655589.130	2150878.873		147167.075	2182476.110
SE31		44877.485	654833.045	2146388.045		147289.198	2179985.530
PR01		44381.814	655803.420	2145826.555		145582.956	2182522.978
Sludge Ditch Beds							
SE45		48693.176	654086.886	2145949.437		153185.188	2177548.973
SE47		47117.173	654049.881	2143320.983		134537.245	2177428.496
SE41		48380.822	653942.053	2145874.382		152075.142	2177072.383
HCL Tank							
SE05		48999.293	656307.783	2153338.381		154178.415	2184833.870
SE08		48012.200	656807.677	2154876.523		150931.917	2186473.977
PR07		47640.475	656374.729	2153436.382		152274.917	2185053.581
Ordinance Disposal							
SE16		44935.219	656910.278	2152213.140		147398.528	2186810.565
PR02		44519.788	656757.523	2154731.975		148035.508	2186309.389
SE15		44874.549	656322.201	2153283.157		147199.504	2184881.187
Fuel Truck Maint.							
SE10		45484.255	656655.015	2154375.692		149134.216	2185973.103
PR03		45229.480	657014.725	2155555.811		148593.948	2187153.241
Others							
SE03		47481.646	656307.338	2153234.394		155782.933	2184832.489
SE19		44134.062	656849.278	2154398.837		144778.984	2185954.242
SE33		45572.014	654847.132	2148444.301		149483.824	2180041.762
SE38		45560.105	653975.745	2145385.425		149448.783	2177182.896
		45726.548	654009.317	2145895.371		149094.849	2177293.048

[illegible]

[illegible]

[illegible]

Topographic	HM-C	Sludge and Pesticide			Conversion		3.28083337			NAD-27		
		NAD-83 Feet			NAD-83 Meters			NAD-27				
Description	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation
SB-029	153312.251	2145887.276	1226.929	46729.667	654006.782	373.989	153285.911	2177284.758	1226.929			
SB-030	153346.842	2145883.882	1225.960	46740.210	654005.748	373.673	153320.501	2177281.365	1225.960			
SB-031	153365.289	2145884.283	1226.145	46745.833	654005.870	373.730	153338.949	2177281.766	1226.145			
SB-032	153366.845	2145704.893	1226.026	46746.307	654012.152	373.693	153340.504	2177302.376	1226.026			
SB-033	153369.982	2145725.373	1226.205	46747.263	654018.384	373.748	153343.640	2177322.855	1226.205			
SB-034	153367.428	2145750.652	1225.884	46746.485	654026.099	373.650	153341.088	2177348.133	1225.884			
NWC-034	153327.504	2145660.862	1227.987	46734.316	653988.731	374.291	153301.164	2177258.344	1227.987			
Brass Tag	153325.646	2145662.395	1228.252	46733.750	653989.189	374.372	153299.307	2177259.879	1228.252			
MW2-67A	153325.656	2145662.944	1227.880	46733.753	653988.580	374.259	153299.317	2177260.427	1227.880			
NWC-034	153334.792	2145660.365	1227.942	46736.538	653988.580	374.277	153308.454	2177257.848	1227.942			
Brass Tag	153332.586	2145662.743	1228.136	46735.865	653989.305	374.337	153306.246	2177260.227	1228.136			
MW2-67B	153333.109	2145662.460	1227.749	46736.025	653989.218	374.219	153306.771	2177259.941	1227.749			
SG-021	153284.259	2145661.494	1227.875	46724.183	653988.924	374.257	153267.920	2177258.977	1227.875			
SG-027	153504.913	2145656.153	1227.450	46788.391	653997.296	374.128	153478.575	2177253.637	1227.450			
NWC-034	153485.156	2145668.540	1227.773	46782.369	654001.072	374.228	153458.818	2177266.025	1227.773			
Brass Tag	153482.661	2145670.729	1227.992	46781.608	654001.739	374.293	153456.321	2177267.817	1227.992			
MW2-68A	153483.317	2145670.331	1227.639	46781.808	654001.618	374.185	153456.977	2177267.817	1227.639			
NWC-034	153498.329	2145667.974	1227.737	46786.384	654000.899	374.215	153471.990	2177265.458	1227.737			
Brass Tag	153497.345	2145669.894	1227.801	46786.084	654001.484	374.234	153470.445	2177267.377	1227.801			
MW2-68B	153496.783	2145670.021	1227.501	46785.913	654001.523	374.143	153470.445	2177267.505	1227.501			
SB-035	153513.044	2145686.160	1225.832	46790.869	654006.442	373.634	153488.704	2177283.644	1225.832			
SB-041	153461.953	2145572.501	1226.184	46775.296	653971.799	373.742	153435.613	2177169.986	1226.184			
SG-045	153403.851	2145548.281	1227.352	46757.587	653984.417	374.088	153377.514	2177145.766	1227.352			
SG-043	153478.151	2145547.779	1227.388	46780.233	653964.264	374.109	153451.811	2177145.265	1227.388			
SB-039	153436.514	2145600.936	1225.186	46767.542	653980.466	373.437	153410.174	2177198.420	1225.186			
SB-040	153422.287	2145576.593	1225.367	46763.206	653973.046	373.493	153395.948	2177174.077	1225.367			
SB-036	153520.297	2145709.088	1225.408	46793.080	654013.431	373.505	153493.958	2177306.573	1225.408			
SB-037	153515.849	2145723.059	1225.822	46791.724	654017.689	373.631	153489.509	2177320.543	1225.822			
SB-038	153515.734	2145749.026	1225.397	46791.689	654025.604	373.502	153488.394	2177346.511	1225.397			
SG-030	153587.989	2145651.621	1228.246	46813.712	653985.915	374.370	153581.649	2177249.107	1228.246			
SG-034	153561.346	2145780.604	1228.528	46805.591	654035.229	374.456	153535.004	2177378.089	1228.528			
SG-035	153529.622	2145780.692	1228.755	46795.922	654035.256	374.525	153503.281	2177378.177	1228.755			
NWC-034	153503.822	2145892.455	1228.566	46788.058	654089.321	374.468	153477.479	2177489.938	1228.566			
Brass Tag	153501.522	2145894.847	1228.786	46787.357	654070.050	374.535	153475.180	2177492.330	1228.786			
MW2-66B	153501.835	2145894.243	1228.424	46787.452	654089.866	374.424	153475.491	2177491.726	1228.424			
NWC-034	153512.675	2145892.637	1228.458	46790.766	654089.377	374.435	153486.331	2177490.122	1228.458			
Brass Tag	153511.424	2145894.290	1228.601	46780.375	654069.880	374.478	153485.081	2177491.772	1228.601			
MW2-66A	153510.700	2145894.300	1228.209	46790.154	654069.883	374.359	153484.356	2177491.782	1228.209			

Topographic	HM-D	Fuel Truck	NAD-83 Meters			NAD-83 Feet		
Description	NAD-83 Feet		Northing	Easting	Elevation	Northing	Easting	Elevation
NWCropad	148775.507	2155282.108	45346.865	658931.283	394.852	148749.069	2186879.522	1285.444
TopCap	148773.603	2155283.795	45346.284	658931.807	395.635	148747.163	2186881.208	1298.011
MW2-59	148773.597	2155283.829	45346.283	658931.818	395.564	148747.160	2186881.244	1297.780
NWCropad	148680.914	2155133.601	45318.033	658886.028	394.870	148654.478	2186731.015	1285.503
TopCap	148679.362	2155135.280	45317.560	658886.540	395.604	148652.928	2186732.895	1297.910
MW2-61	148679.399	2155135.301	45317.571	658886.546	395.530	148652.962	2186732.714	1287.669
SG-011	148684.532	2155080.720	45319.135	658899.910	394.292	148658.094	2186678.134	1293.608
SG-007	148683.838	2155189.989	45328.439	658897.113	394.533	148657.198	2186750.834	1295.849
SB-028	148708.482	2155153.422	45328.543	658886.112	394.915	148682.056	2186731.291	1295.280
SB-026	148715.397	2155133.878	45328.439	658892.089	394.820	148688.959	2186723.049	1295.337
SB-025	148744.572	2155125.634	45337.436	658883.600	394.855	148718.136	2186718.650	1295.452
SB-024	148770.840	2155121.237	45345.442	658882.259	394.820	148744.402	2186749.887	1295.640
SB-023	148773.587	2155152.471	45346.273	658991.780	394.912	148747.128	2186766.271	1295.340
SG-003	148792.311	2155168.857	45351.987	658877.795	394.847	148765.875	2186704.005	1295.427
SB-021	148790.269	2155108.589	45351.364	658874.451	394.962	148740.941	2186893.033	1295.804
SB-022	148767.379	2155095.618	45344.387	658874.326	394.967	148681.693	2186892.623	1295.822
SB-027	148708.128	2155095.209	45326.328	658873.609	394.958	148718.373	2186890.271	1295.791
NWCropad	148744.809	2155092.856	45337.508	658873.854	394.988	148717.506	2186691.074	1295.890
Brasidri	148743.943	2155093.661	45337.244	658873.835	394.896	148716.863	2186691.012	1295.587
MW2-60	148743.298	2155093.599	45337.048					
		Conversion						
		Factor						

[illegible]

Topographic	HM-F	Fire Training	NAD-83			NAD-27		
Description	NAD-83 Feet	Easting	Northing	Easting	Elevation	Northing	Easting	Elevation
NWCorPad	150498.212	2150382.314	45872.251	655431.737	378.817	150472.828	2181959.759	1246.117
Brasstaq	150498.710	2150381.243	45871.488	655431.410	378.883	150470.323	2181958.686	1246.334
MW2-64A	150498.592	2150381.920	45871.482	655431.617	378.787	150470.205	2181959.365	1246.052
NWCorPad	150498.378	2150370.497	45871.387	655434.231	378.705	150469.991	2181967.941	1245.748
BrasTaq	150494.048	2150389.768	45870.677	655434.008	378.750	150467.862	2181967.209	1245.897
MW2-64B	150493.787	2150370.314	45870.598	655434.175	378.655	150467.403	2181967.757	1245.588
NWCORPAD	150413.765	2150435.848	45846.207	655454.150	378.977	150387.380	2182033.281	1243.361
BRASSTAG	150412.971	2150437.446	45845.965	655454.637	378.938	150386.585	2182034.889	1243.561
MW2-63B	150412.498	2150437.914	45845.821	655454.780	378.954	150386.113	2182035.358	1243.284
NWCORPAD	150417.478	2150443.373	45847.339	655456.444	379.059	150391.093	2182040.817	1243.630
BRASSTAG	150416.999	2150445.608	45847.192	655457.125	379.108	150390.611	2182043.052	1243.790
MW2-63A	150416.351	2150445.576	45846.985	655457.115	378.985	150445.859	2182138.117	1246.052
NWCORPAD	150472.247	2150540.674	45884.032	655488.101	379.797	150444.701	2182139.902	1246.266
BRASSTAG	150471.088	2150542.460	45883.679	655488.845	379.883	150444.517	2182140.558	1245.940
MW2-62B	150470.906	2150543.115	45883.623	655488.845	379.783	150449.284	2182150.03	1246.409
NWCORPAD	150475.671	2150552.588	45885.078	655489.732	379.906	150447.863	2182151.526	1246.531
BRASSTAG	150474.251	2150554.084	45884.643	655490.188	379.943	150447.890	2182152.166	1246.213
MW2-62A	150474.278	2150554.721	45884.651	655490.383	379.848	150699.702	2182187.591	1251.120
NWCORPAD	150726.091	2150590.145	45941.404	655501.180	381.342	150698.278	2182190.524	1251.270
BRASSTAG	150724.866	2150593.078	45940.970	655502.074	381.388	150698.281	2182189.884	1250.976
MW2-65A	150724.671	2150592.440	45940.971	655501.879	381.298	150714.157	2182180.865	1250.939
NWCORPAD	150740.546	2150583.419	45945.810	655499.130	381.287	150712.782	2182182.571	1251.089
BRASSTAG	150739.181	2150585.126	45945.394	655499.650	381.333	150712.875	2182183.201	1250.812
MW2-65B	150739.283	2150585.757	45945.419	655499.842	381.248			
		Conversion Factor	3.28083337					

Topographic	HMA-G File	Fire Control													
	NAD-83 Feet														
	Northing	Easting	Elevation												
	NAD-83 Meters			Northing	Easting	Elevation									
	NAD-27			Northing	Easting	Elevation									
SB-018	147211.133	2150886.702	1288.631	44870.043	655,591.571	386.679	147184.752	2,182,484.119							
SB-017	147032.432	2150889.734	1270.361	44815.574	655,592.485	387.207	147008.049	2,182,487.149							
SB-016	146809.978	2150890.028	1273.784	44747.770	655,592.584	388.250	146783.596	2,182,487.440							
SB-015	146611.995	2150890.336	1275.957	44687.425	655,592.678	388.912	146585.615	2,182,487.746							
				Conversion Factor			NAD-27 Derived								
				Meters X 3.28083337			Corrascon Prog								
				3.28083337											

Coordinates in NAD 27 (Feet)			
SB-046	153257.757	2185233.520	1275.110
SB-044	153812.059	2185218.954	1275.980
SB-042	154123.573	2185217.979	1276.230
SB-043	154419.041	2185201.941	1275.830
SB-019	150737.212	2178625.825	1227.435
SB-020	150755.821	2178608.357	1226.202
SB-029	153285.911	2177284.758	1228.929
SB-030	153320.501	2177281.365	1225.960
SB-031	153338.949	2177281.766	1226.145
SB-032	153340.504	2177302.376	1226.026
SB-033	153343.640	2177322.855	1226.205
SB-034	153341.088	2177348.133	1225.884
NWCorPad	153301.164	2177258.344	1227.987
BrassTag	153299.307	2177259.879	1228.252
MW2-67A	153299.317	2177260.427	1227.880
NWCorPad	153308.454	2177257.848	1227.942
BrassTag	153306.246	2177260.227	1228.136
MW2-67B	153306.771	2177259.941	1227.749
SG-021	153287.920	2177258.977	1227.875
SG-027	153478.575	2177253.637	1227.450
NWCorPad	153458.818	2177268.025	1227.773
BrassTag	153456.321	2177268.214	1227.992
MW2-68A	153456.977	2177267.817	1227.639
NWCorPad	153471.990	2177265.458	1227.737
BrassTag	153471.008	2177267.377	1227.801
MW2-68B	153470.445	2177267.505	1227.501
SB-035	153486.704	2177283.644	1225.832
SB-041	153435.613	2177169.986	1226.184
SG-045	153377.514	2177145.766	1227.352
SG-043	153451.811	2177145.265	1227.388
SB-039	153410.174	2177198.420	1225.186
SB-040	153395.948	2177174.077	1225.367
SB-036	153493.958	2177306.573	1225.408
SB-037	153489.509	2177320.543	1225.822
SB-038	153489.394	2177346.511	1225.397
SG-030	153561.649	2177249.107	1228.248
SG-034	153535.004	2177378.089	1228.528
SG-035	153503.281	2177378.177	1228.755
NWCorPad	153477.479	2177489.938	1228.566
BrassTag	153475.180	2177492.330	1228.786
MW2-66B	153475.491	2177491.726	1228.424
NWCorPad	153486.331	2177490.122	1228.458
BrassTag	153485.081	2177491.772	1228.601
MW2-68A	153484.358	2177491.782	1228.209
NWCorPad	148749.069	2186879.522	1295.444
TopCap	148747.163	2186881.208	1298.011
MW2-69	148747.160	2186881.244	1297.780
NWCorPad	148664.478	2186731.015	1295.503
TopCap	148652.926	2186732.695	1297.910
MW2-61	148652.962	2186732.714	1297.669
SG-011	148658.094	2186678.134	1293.608
SG-007	148657.198	2186767.383	1294.398
SB-028	148682.056	2186750.834	1295.649
SB-026	148688.959	2186731.291	1295.280
SB-025	148718.136	2186723.049	1295.337
SB-024	148744.402	2186718.650	1295.452
SB-023	148747.128	2186749.887	1295.640
SG-003	148765.875	2186766.271	1295.340
SB-021	148763.832	2186704.005	1295.427
SB-022	148740.941	2186693.033	1295.804
SB-027	148681.693	2186692.623	1295.822
NWCorPad	148718.373	2186690.271	1295.791
Brasstag	148717.508	2186691.074	1295.890
MW2-60	148716.863	2186691.012	1295.587
SB-014	146418.665	2185080.834	1311.061
SB-013	146396.651	2185052.828	1310.171
SB-011	146421.474	2185927.396	1310.433
SB-012	146439.390	2185919.358	1310.473
SB-010	146515.850	2185941.209	1311.318
NWCorSite	146694.980	2185919.921	1309.813
SWCorSite	146424.969	2185785.474	1308.511
SECorSite	146279.439	2188076.341	1308.422
NECorSite	146546.781	2188209.268	1306.203
NWCorPad	150472.826	2181959.759	1246.117

Brasstag	150470.323	2181958.688	1246.334
MW2-64A	150470.205	2181959.365	1246.052
NWCORPAD	150469.991	2181967.941	1245.748
Brasstag	150467.662	2181967.209	1245.897
MW2-64B	150467.403	2181967.757	1245.586
NWCORPAD	150387.380	2182033.291	1243.361
BRASSTAG	150386.585	2182034.889	1243.561
MW2-63B	150386.113	2182035.358	1243.284
NWCORPAD	150391.093	2182040.817	1243.630
BRASSTAG	150390.611	2182043.052	1243.790
MW2-63A	150389.984	2182043.019	1243.387
NWCORPAD	150445.859	2182138.117	1246.052
BRASSTAG	150444.701	2182139.902	1246.266
MW2-62B	150444.517	2182140.558	1245.940
NWCORPAD	150449.284	2182150.03	1246.409
BRASSTAG	150447.863	2182151.526	1246.531
MW2-62A	150447.890	2182152.188	1246.213
NWCORPAD	150699.702	2182187.591	1251.120
BRASSTAG	150698.278	2182190.524	1251.270
MW2-65A	150698.281	2182189.884	1250.976
NWCORPAD	150714.157	2182180.865	1250.939
BRASSTAG	150712.792	2182182.571	1251.089
MW2-65B	150712.875	2182183.201	1250.812
SB-018	147184.752	2,182,484.119	1268.631
SB-017	147006.049	2,182,487.149	1270.361
SB-016	146783.586	2,182,487.440	1279.784
SB-015	146585.615	2,182,487.746	1275.957

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Coordinates in NAD 83 (Meters)			
46721.114	656429.578	388.654	SB-045
46890.066	656425.137	388.919	SB-044
46985.016	656424.839	388.996	SB-042
47075.075	656419.050	388.874	SB-043
46952.828	654720.380	374.123	SB-019
46958.600	654715.330	373.747	SB-020
46729.667	654006.782	373.969	SB-029
46740.210	654005.748	373.673	SB-030
46745.833	654005.870	373.730	SB-031
46746.307	654012.152	373.693	SB-032
46747.263	654018.394	373.748	SB-033
46746.485	654026.099	373.650	SB-034
46734.318	653998.731	374.291	NWCorPad
46733.760	653999.199	374.372	BrassTag
46733.763	653999.366	374.259	MW2-67A
46736.638	653998.580	374.277	NWCorPad
46735.865	653999.305	374.337	BrassTag
46736.025	653999.218	374.219	MW2-67B
46724.163	653998.924	374.257	SG-021
46788.391	653997.296	374.128	SG-027
46782.369	654001.072	374.226	NWCorPad
46781.608	654001.739	374.293	BrassTag
46781.808	654001.618	374.185	MW2-68A
46786.384	654000.899	374.215	NWCorPad
46786.084	654001.484	374.234	BrassTag
46786.913	654001.523	374.143	MW2-68B
46790.869	654006.442	373.634	SB-035
46775.296	653971.799	373.742	SB-041
46767.687	653964.417	374.098	SG-045
46780.233	653964.264	374.109	SG-043
46767.642	653980.466	373.437	SB-039
46763.206	653973.046	373.493	SB-040
46793.080	654013.431	373.505	SB-036
46791.724	654017.889	373.631	SB-037
46791.689	654025.604	373.502	SB-038
46813.712	653995.915	374.370	SG-030
46805.691	654035.229	374.456	SG-034
46795.922	654035.256	374.525	SG-035
46788.058	654069.321	374.468	NWCorPad
46787.357	654070.050	374.535	BrassTag
46787.452	654069.868	374.424	MW2-66B
46790.786	654069.377	374.435	NWCorPad
46780.376	654069.880	374.478	BrassTag
46790.164	654069.883	374.359	MW2-66A
46346.866	656931.293	394.852	NWCorPad
46346.284	656931.807	395.635	TopCap
46346.283	656931.818	395.664	MW2-59
46318.033	656886.028	394.870	NWCorPad
46317.560	656886.540	395.604	TopCap
46317.571	656886.546	395.630	MW2-61
46319.135	656889.910	394.292	SG-011
46318.862	656897.113	394.533	SG-007
46328.439	656892.069	394.915	SB-028
46328.543	656886.112	394.802	SB-026
46337.436	656883.600	394.820	SB-025
46345.442	656882.259	394.855	SB-024
46346.273	656891.780	394.912	SB-023
46381.987	656896.774	394.820	SG-003
46351.364	656877.795	394.847	SB-021
46344.387	656874.451	394.962	SB-022
46328.328	656874.326	394.967	SB-027
46337.508	656873.609	394.958	NWCorPad
46337.244	656873.854	394.988	BrassTag
46337.048	656873.835	394.896	MW2-60
44888.661	656657.377	399.612	SB-014
44828.793	656648.841	399.341	SB-013
44837.407	656641.089	399.421	SB-011
44842.868	656638.639	399.433	SB-012
44866.173	656645.299	399.691	SB-010
44720.772	656638.810	399.232	NWCorSite
44638.472	656597.831	398.835	SWCorSite
44694.116	656686.488	398.808	SECorSite
44876.802	656727.004	398.131	NECorSite
45872.251	655431.737	379.817	NWCorPad

45871.488	655431.410	379.883	Brasstag
45871.452	655431.817	379.797	MW2-84A
45871.387	655434.231	379.705	NWCORPAD
45870.877	655434.008	379.750	Brasstag
45870.598	655434.175	379.655	MW2-84B
45846.207	655454.150	378.977	NWCORPAD
45846.965	655454.637	379.038	BRASSTAG
45846.821	655454.780	378.954	MW2-83B
45847.339	655456.444	379.059	NWCORPAD
45847.192	655457.125	379.108	BRASSTAG
45846.995	655457.115	378.985	MW2-83A
45864.032	655486.101	379.797	NWCORPAD
45863.679	655486.645	379.863	BRASSTAG
45863.623	655486.845	379.763	MW2-82B
45865.076	655489.732	379.906	NWCORPAD
45864.643	655490.188	379.943	BRASSTAG
45864.651	655490.383	379.846	MW2-82A
45941.404	655501.180	381.342	NWCORPAD
45940.970	655502.074	381.388	BRASSTAG
45940.971	655501.879	381.298	MW2-85A
45945.810	655499.130	381.287	NWCORPAD
45945.394	655499.650	381.333	BRASSTAG
45945.419	655499.842	381.248	MW2-85B
44870.043	655581.571	388.679	SB-018
44816.674	655582.495	387.207	SB-017
44747.770	655582.584	388.250	SB-016
44687.425	655582.678	388.912	SB-015

NAD-83

END

APPENDIX E
GEOTECHNICAL, CERTIFICATES OF ANALYSIS,
AND CHAIN OF CUSTODY

409802

409832

CERTIFICATE OF ANALYSIS

Routed to CF, TZ, K R.
3/21/94

Karmen Deane
IT Corporation
5307 Industrial Oaks Blvd.
Suite 160
Austin, TX 78735

March 16, 1994

ETDC Project Number: 483500.094.01 P.O. Number: 4627-341
Job Number: 4I4627

This is the Certificate of Analysis for the following samples:

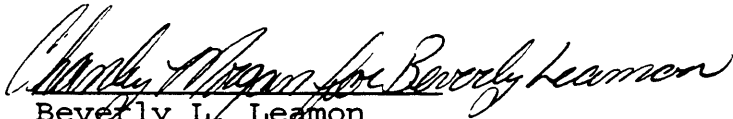
Client Project ID:	Tinker AFB
Date Received by Lab:	October 28, 1993
Number of Samples:	Two (2)
Sample Type:	Soil

I. Introduction/Case Narrative

Two (2) soil samples were received by IT/ETDC on (October 28, 1993) for analyses of grain size distribution, cation exchange capacity, moisture content and permeability. Not all samples required all parameters.

Please see Appendix A, the Sample Number Cross Reference List; Appendix B, the Analysis Results; Appendix C, the Chain of Custody and Request for Analysis Records.

Reviewed and Approved:



Beverly L. Leamon
Project Manager, Geotechnical Services

II. Analytical Results/Methodology

Route 1 to CF, TL, kn
3/21/94

REFERENCES: Annual Book of ASTM Standards, Section 4, Construction, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics. Volume 4.02, Concrete and Aggregates.

Grain Size Distribution
Cation Exchange Capacity
Moisture Content
Permeability

ASTM D422
EPA, Method 9081
ASTM D 2216
ASTM D 5084

III. Quality Control

Except for cation exchange capacity analysis, quality control checks such as duplicates and spikes (QC samples), are not normally applicable to geotechnical testing. This is due to the inability of obtaining samples with known characteristics, the heterogenous nature of the samples, and Quality Control procedures built-in to the analytical method.

QC measures to ensure accuracy and precision of test results include the following:

- 100% verification on all numerical results - all raw data entries, transcriptions and calculations entered by lab technicians are checked, recalculated and verified. Most data calculations are performed by computer programs.
- Data validation through test reasonableness - summaries of all test results for individual reports are reviewed to determine the overall reasonableness of data and to determine the presence of any data that may be considered outliers.
- Quality control procedures are built into most standardized geotechnical procedures. For example, many analyses routinely call for a re-analysis, specifying an acceptance criteria.
- Routine instrument calibration - all instruments, gauges and equipment used in testing are calibrated on a routine basis. All instrument calibration follows ASTM or manufacturer guidelines.
- Maintenance of all past calibration records - records and certification documents of all instruments, gauges and equipment are updated routinely and maintained in the Quality Control Coordinators Quality/Operations files.

Page 3 of 9
Karmen Deane
IT Corporation
March 16, 1994
Client Project ID: TINKER AFB
ETDC Project No.: 483500.094.01

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Revised to CF, TZ, K-
5/2/94

- Use of trained personnel for conducting tests - all technicians are trained in the application of standard laboratory procedures for geotechnical analyses as well as the quality assurance measures implemented by IT.

IV. Data Qualification

Fine sieve and hydrometer results occasionally overlap due to organic debris, soluble salts or other contaminants contained in the sample. Data points are plotted as calculated. No attempt has been made to curve-fit the grainsize data points.

The cation exchange procedure included analysis of a blank, duplicate and a matrix spike. The blank value was found to be near the method detection limit of 0.05 mg/l for sodium analysis. The relative percent difference for the duplicate sample was 3.8%. The matrix spike recovery was 73 %.

Moisture contents are calculated in accordance with ASTM D 2216. Given results are based on the sample dry weight, not on the sample wet weight as is common in analytical chemistry.

Appendix A

Page 4 of 9
Karmen Deane
IT Corporation
March 16, 1994
Client Project ID: TINKER AFB
ETDC Project No.: 483500.094.01

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OAK RIDGE, TN
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Round to CF, T, &
3/21/94

CROSS-REFERENCE LIST

ETDC SAMPLE NO.

CLIENT SAMPLE NO.

ETDC-4462.....	B310336-18A
ETDC-4463.....	B310336-18B

Appendix B

Page 5 of 9
 Karmen Deane
 IT Corporation
 March 16, 1994
 Client Project ID: TINKER AFB
 ETDC Project No.: 483500.094.01

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Routed to CF-1A
 3/21/94

PARTICLE SIZE ANALYSIS ASTM D 422

Project Name: TINKER AFB

Client Number: B310336-18A

Project Number: 483500.094.01

ETDC Number: ETDC-4462

Specific Gravity = 2.6500
 Assumed

Moisture Content = NA

SIEVE ANALYSIS

C O A R S E	Sieve No.	Diameter mm	Percent Finer
	3"	75.000	100.0%
	1.5"	37.500	100.0%
	0.75"	19.000	100.0%
	0.375"	9.500	100.0%
	#4	4.750	100.0%
	#10	2.000	100.0%

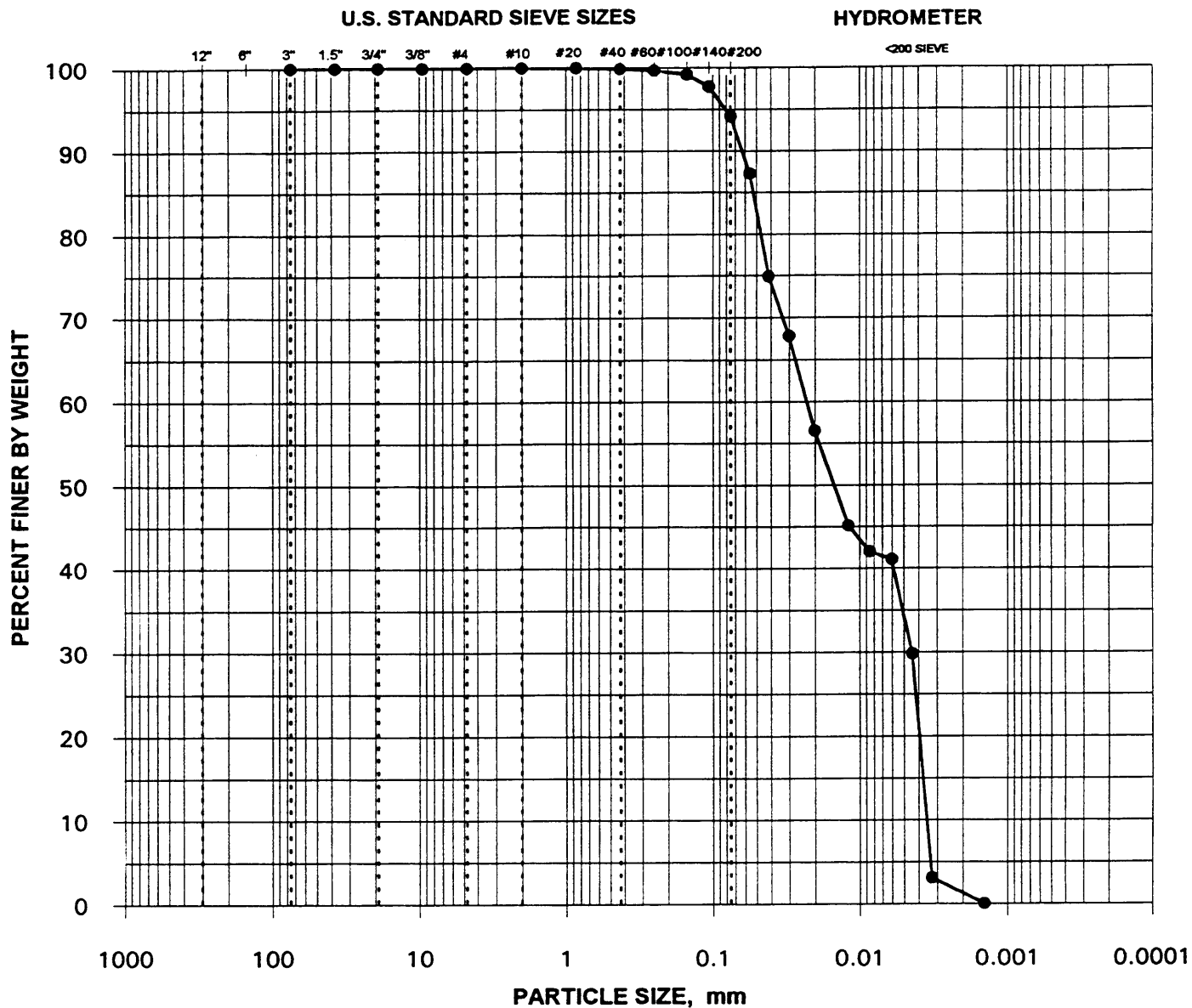
F I N E	Sieve No.	Diameter mm	Percent Finer
	#20	0.850	100.0%
	#40	0.425	99.8%
	#60	0.250	99.6%
	#100	0.149	99.2%
	#140	0.106	97.8%
	#200	0.075	94.2%

HYDROMETER ANALYSIS

H Y D R O M E T E R	Diameter mm	Percent Finer
	0.05528	87.3%
	0.04129	74.9%
	0.03006	67.8%
	0.01992	56.5%
	0.01195	45.2%
	0.00856	42.1%
	0.00608	41.1%
	0.00440	29.8%
	0.00325	3.1%
	0.00142	0.0%

ROUTED TO CF 74
 3/21/94

TINKER AFB



CLIENT SAMPLE NO.: B310336-18A

ETDC SAMPLE NO.: ETDC-4462

BOULDERS	COBBLES	GRAVEL		SAND		
		COARSE	FINE	COARSE	MEDIUM	FINE

SILT 2 - 75 microns
 CLAY <2 microns

**IT ENVIRONMENTAL TECHNOLOGY
DEVELOPMENT CENTER
OAK RIDGE, TN
(615) 482-6497**

PROJECT NAME: TINKER AFB **PROJECT NUMBER:** 483500.094.01

[illegible]

Page 8 of 9
Karmen Deane
IT Corporation
March 16, 1994
Client Project ID: TINKER AFB
ETDC Project No.: 483500.094.01

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(615) 482-6497

Revised to (ETDC)
3/21/94

**CATION EXCHANGE CAPACITY
EPA SW-846
METHOD 9081**

PROJECT NAME: TINKER AFB

PROJECT NUMBER: 483500.094.01

ETDC SAMPLE NUMBER	CLIENT SAMPLE NUMBER	WEIGHT OF SAMPLE, GRAMS	SODIUM CONCENTRATION, MG/L	CATION EXCHANGE CAPACITY, MEQ/100 GRAMS	RPD %
ETDC-4462	B310336-18A	6.08	251.0	17.96	

*RPD = RELATIVE PERCENT DIFFERENCE FOR ORIGINAL & DUPLICATE SAMPLES

Page 9 of 9
Karmen Deane
IT Corporation
March 16, 1994
Client Project ID: TINKER AFB
ETDC Project No.: 483500.094.01

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(615) 482-6497

Round 10 CFTR
3/21/02

PERMEABILITY RESULTS

ETDC SAMPLE NO.	CLIENT SAMPLE NO.	LENGTH/ DIAMETER/ WEIGHT	COEFF. OF PERMEABILITY
ETDC-4463	B310336-18B	11.167 cm/ 3.582 cm/ 235.68 grams	4.7 E-9 cm/s

Appendix C



Route 1 to CT, TX, NH
21/94

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 41660
Page 1 of 1

Tinker 5001

Project Name/No. 18310336

Sample Team Members 2 Client

Team Members 2 Client 4627
Profit Center No 3

Project Manager⁴ Karna Deane

Purchase Order No. 6 will flowRequired Report Date ¹¹ // -10.93

Samples Shipment Date ⁷ 10.27-93

Lab Destination ⁸ ETD C

Lab Contact ⁹B. Leamon

Project Contact/Phone 12512-8926684

Carrier/Waybill No. 13 F05X

Report to: 10

ONE CONTAINER PER LINE

[illegible]

Special Instructions: 23

Possible Hazard Identification: 24

Non-hazard	Flammable	Skin Irritant	Poison B	Unknown

Sample Disposal: 23

Disposal by Lab ☒ Archive ☐

Turnaround Time Required: 26

Level: 2

Project Specific (specify):

7-27-93

1 Received by 28

Date:

Time: 1700

(Signature/Affiliation)

Time!

Date: _____

2. Received by

Date: _____

Date: _____

3 Received by

Name: _____

Comments: 29